TECHNOLOGY DEPT!

TELEPHONE ENGINEER

and Management

KEEP 'EM TALKING

JULY 15, 1942

Entered as Second Class Matter at the Post Office at Pontiac, Ill., under the Act of March 3, 1879.

QUALITY TELEPHONE EQUIPMENT

Leich Sales Corporation

CONSTRUCTION MATERIALS + TOOLS + SUPPLIES =

Products of LEICH ELECTRIC COMPANY

CENTRAL OFFICE SWITCHBOARDS

FLOOR TYPE & CORDLESS P.B.X.'S

DESK AND WALL HANDSETS

CONVENTIONAL TELEPHONES AND GENERATOR BOXES

RINGING MACHINES

PROTECTIVE APPARATUS

COMPLETE LINE OF CONSTRUCTION MATERIALS TOOLS AND SUPPLIES

=

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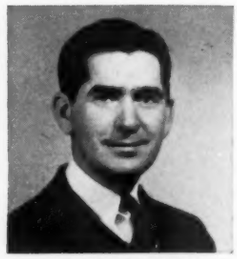
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Service G G ~~Sales~~ Representative . . .

READY, EAGER and ABLE

To Help You Keep Your Equipment In Fighting Trim

In this emergency, your Kellogg representative is the man you can rely on to help keep your present equipment in first-class operating shape. You'll find him a constant source of information on how to extend the life of switchboards, telephones and apparatus and on how to routine equipment to assure efficient, uninterrupted service. He knows the maintenance problems you face, and out of his broad experience in the telephone industry can help you solve them.

He can help you in other ways, too. When new war plant construction or extension calls for installation of new telephone service, he will work right with you . . . assist in planning and engineering the installation . . . help you reap the benefits of new business permitted under the war program that comes your way.

Depend on Kellogg to keep its experienced representatives "in there pitching" for you. Our whole field force is at the Independent telephone industry's command to aid in keeping open vital communication lines under today's difficult conditions.

KELLOGG SWITCHBOARD & SUPPLY CO., CHICAGO

KELLOGG

EXTRA EDITION

Telephon

KELLOGG LINE SUPPLIES

USE KESTER ROSIN-CORE SOLDER AND ELIMINATE HIGH RESISTANCE POINTS

Solder-protected joints eliminate high resistance points and intermittent open and closed circuits. To save trouble, every joint should have this extra protection. For many years, Kester Rosin-Filled Solder has been known through the entire telephone field as the most satisfactory product of its kind that is possible to obtain. Nearly 1½ tons of this solder are used every year in the Kellogg factory alone! So to save your time and money, and improve transmission, insist that all joints be properly soldered with Kester Solder. Available on 1-, 5- and 20-pound spools.

ODD.....BUT TRUE !
OVER 1½ TONS OF KESTER ROSIN CORE SOLDER ARE USED IN THE KELLOGG FACTORY TO MAKE THE HUNDREDS OF THOUSANDS OF SOLDERED CONNECTIONS ON SWITCHBOARDS AND TELEPHONES EVERY YEAR !
ORIGINALLY SWITCHBOARD OPERATORS WERE BOYS ! LATER REPLACED BY GIRLS BECAUSE "GIRLS WERE STEADIER AND DIDN'T DRINK BEER !"
A PORCELAIN GLAZE IS A BODY WHEN FIRED AT A LOW TEMPERATURE, AND THE BODY IS A GLAZE WHEN FIRED AT A VERY HIGH TEMPERATURE !

Kellogg Bronze Drop Wire Is Famous For Long Life

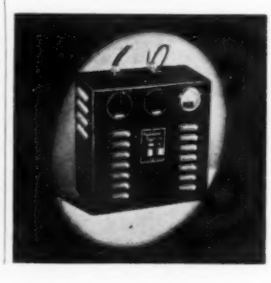
Millions of feet of Kellogg Bronze Drop Wire are now in service throughout the country — practical evidence of the unusual efficiency and long service life for which this drop wire has become famous. Look at these features: A special armored coat of Mica; a bettermethod of tracer identification, banishing forever the old wear-inducing raised tracer; long life, moisture-proof insulation; a solid bronze conductor for 85% conductivity, 32 ohms resistance, high tensile strength and ductility.

Hemingray Insulators Save Time and Materials

When a glass insulator can be had that outlasts the pole it's used on, it helps the War effort by saving men and materials. So Hemingray, through carefully controlled production which assures this extra long life, has earned its "first place" position. Made by Owens-Illinois Glass Co., these Hemingray Insulators are impervious to moisture — do not age or deteriorate — have high mechanical and sustained dielectric strength. They are unaffected by sudden temperature changes, and are available in all styles. Specify Hemingray Insulators and cut your operating budget.

Get Battery Reliability With Fansteel Balkite Taper Rectifiers

These dependable rectifiers provide automatic charge regulation for PBX, toll and small central office batteries at the lowest possible cost. Operation is extremely simple. After the charging rate is set to meet the average normal load requirements, the charge rises and falls in proportion to the load demand and variations in battery voltage. The charge automatically follows the load, rising with increased traffic and tapering off during light load periods. No overcharging, no undercharging. Write for Bulletin TC-51.



Home Facts

EXTRA EDITION

Published Distributed by the Kellogg Switchboard and Supply Company

INSURE GOOD SERVICE

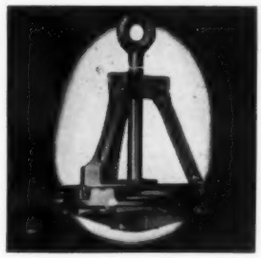
This Sub-Cycle Ringing Machine Is a Fool-Proof as Well as Economical Source of Ringing Current

No routine maintenance is required on this Sub-Cycle Ringing Machine. It has no moving parts, making it a practically foolproof source of economical ringing current. It operates on A.C. and produces a powerful, uniform ringing current independent of frequency variations. It is thoroughly tested and has proved in hundreds of installations that it will give many years of dependable, economical ringing service. Also furnished with Pulsator. Six models are available to choose from with twenty to fifty watt outputs. Here is a piece of equipment that will save you money.

KELLOGG FRICTION TAPE STAYS FRESH AND LASTS

Time is precious today. Things have to be done right the first time. That's why it pays to use good tape —like Kellogg's famous No. 5. For this is the stickin'est, toughest, smoothest tape a telephone man can lay his hands on. And it has been that for many years. It stays fresh through all the seasons, resists oxidation, and makes the job right . . . the first time, and for a long time to come. Furnished in black, in ¾" and 2" widths. Specify Kellogg No. 5 Friction Tape on your next order.

Everstick Anchor Nut Housing Permits Easy Recovery of Rod



The combination of rugged strength and simplicity of operation makes Everstick Anchors the choice of telephone men everywhere . . . for efficiency, economy and safety. Eversticks are made of Certified Malleable Iron, for toughness and rust resistant qualities. The patented Everstick Nut Housing locks anchor firmly on the rod, making installation simple under all conditions and permitting easy recovery of the rod. The base plates are specially constructed for extra strength. Use Everstick Anchors and be sure.

Operators Are More Efficient With Cramer Posture Chairs

The scientific, adjustable posture support of these modern Cramer Posture Chairs makes operators more comfortable and efficient. 4 adjustments, easily made without tools, make Cramer Chairs adaptable and comfortable for everyone. The seat and back are padded with soft, resilient Whipped Foam Latex "Air Flow" cushions. Movement by the occupant makes air circulate throughout, keeping the seat and back always cool and comfortable. The seat and back covers are easily removed for cleaning or replacement. Write for circular which gives complete details.

National Emergency Demands The Best In Experience, Materials and Service

The men behind the Nation's communication lines long ago established a reputation for high efficiency. In every type of weather and business cycle, they have striven mightily to keep the service on a high plane.

Today, with the world at war, no greater responsibility has ever faced the telephone industry. The Armed forces on land, sea and in the air must have the maximum support of industry, agriculture, and all business to speed Victory. The demand for speed, speed and more speed, has its very foundation in adequate, clear and uninterrupted telephone communications.

By placing your requirements in Kellogg's experienced hands, insuring prompt service; by selecting materials and equipment of leading manufacturers, which are fully recommended by Kellogg engineers, you can be sure you are taking the right steps to maintain continuous service.

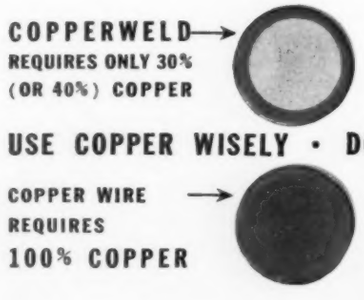
Kellogg's 50 basic, strategically-located, coast-to-coast warehouses plus a superior organization assures efficiency and speed in filling your orders.

Then, the enviable reputation enjoyed by Kellogg for business integrity is more important than ever now. Telephone men like to know and deal with a company that is ever ready to stand behind the products it furnishes. So every line supply item from Kellogg is *doubly* guaranteed: first by the manufacturer, and then by Kellogg.

TELEPHONE companies are getting more miles of line with less copper by using Copperweld. And not only are they saving copper but they are getting all the Copperweld advantages of high strength, good conductivity, rust-resisting life and easy handling. Copperweld wire is guaranteed to have the rust-resisting life of solid copper. Copperweld wire stays new—its better voice transmission and greater safety are permanent characteristics.

Buy Copperweld Line Wire* from American Automatic Electric Sales Company, Graybar Electric Company, Kellogg Switchboard and Supply Company, or Stromberg-Carlson Telephone Manufacturing Company.

**Copperweld Drop Wire may also be obtained from all of these distributors.*



COPPERWELD STEEL COMPANY
GLASSPORT, PA.

IMAGINE MacARTHUR REPORTING by BEACON FIRES

KING AGAMEMNON REPORTS TROY'S FALL (1184 B.C.)

AMONG the early records of communication is the method used by King Agamemnon to tell his wife, Clytemnaestra, of his conquest of Troy. The method —new and unusual then—was a series of beacon fires. Such communications were adequate to the slow tempo of wars in those times and the limited fighting fronts. Today, however, with fronts covering thousands of miles, and the speed of mechanized warfare, communications must be fast, efficient, and secret.

Since the Company's inception, Stromberg-Carlson has been a leader in the field of communications. • In this war, as in the last, it has been the privilege of Stromberg-Carlson to work with the United States Armed Forces in producing communication equipment possessing the high degree of efficiency for which all Stromberg-Carlson products are justly famous. • The Company's entire personnel is dedicated to the slogan: *"Help Stromberg-Carlson Help America—There Is Nothing Finer!"*

Stromberg-Carlson Telephone Mfg. Co., Factory and General Offices: 100 Carlson Road, Rochester, N. Y.; Branch Offices: Chicago, Kansas City, San Francisco, Toronto

Stromberg-Carlson

MAKERS OF VOICE TRANSMISSION AND VOICE RECEPTION APPARATUS FOR FORTY-EIGHT YEARS

Number 1 in a series showing old methods of war communication

We thought the above heading might be a bit more appropriate at this time than our usual "Across the Editor's Desk." It was executed for us by Maurice Sellers, author of a number of articles on selling by advertising, who serves the Independent telephone industry as the originator of many advertising programs.

▼

It will be noted in the Questions & Answers carried in the Explanation of Order L-50 that many of them are almost identical with those we ran in a recent issue prepared by the Defense Committee of the United States Independent Telephone Association. We suggest you file this issue that you might have ready reference when a customer confronts you with a problem that is hard to explain.

▼

The action of the government in "taking over" the Stevens Hotel, Chicago, for army purposes effective August 1 makes us become a bit nostalgic of the good times we have enjoyed there during each annual convention of the National Association. The convention headquarters for the "skeletonized" 2-day Annual Convention for 1942 in Chicago will be changed. Louis Pitcher informs us he will announce the new headquarters at an early date.

▼

Bought your War Bond today?

Ray

TELEPHONE ENGINEER

MANAGEMENT • ENGINEERING • MAINTENANCE

Vol. 46, No. 7 **JULY, 1942**

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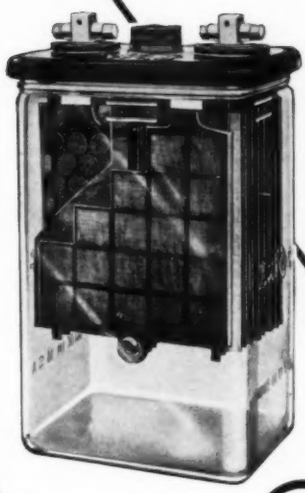
Founded in 1909

Office of Publication, Pontiac, Illinois. Executive and Editorial Offices 7720 Sheridan Road, Chicago, Illinois. Phone Rogers Park 3040. RAY W. SMITH, Editor; ROY F. SMITH, Adv. Manager, DON C. SORENSEN, Sales Prom. Mgr. Subscriptions: U. S., Cuba, Mexico, $1.50 Per Year; Canada, $2.00; In all Other Countries, $3.50. Single copies, U.S.A., 15 cents. All subscriptions should be sent DIRECT to 7720 Sheridan Rd.

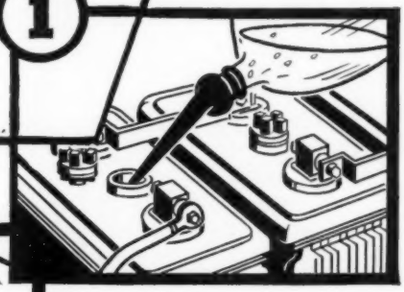
SAVE TO WIN

EVERY storage battery is a war weapon, containing metals vital to our fighting men. You hold these metals in a sacred trust. It's your duty to squeeze from them every ounce of use . . . by following simple rules for battery conservation.



HERE'S HOW TO MAKE YOUR BATTERIES LAST!*

1

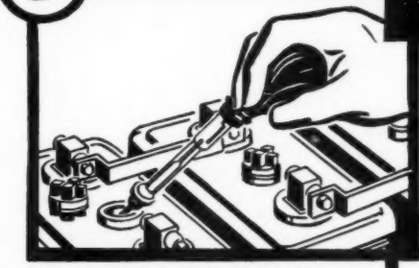


Keep adding approved water at regular intervals. Most kinds of local water are safe in an Exide Battery. Ask us if yours is safe.

2

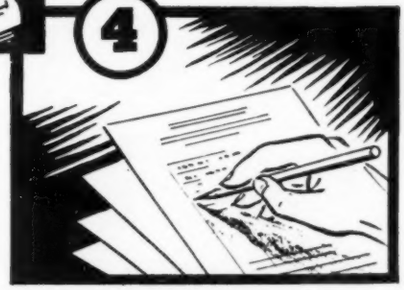
Keep the top of the battery and battery container clean and dry at all times. This will assure maximum protection of the inner-workings.

3



Keep the battery fully charged—but avoid excessive overcharge. There's always a right-way to do any job, and a storage battery will last longer when charged at its proper voltage.

4



Keep records of water additions, voltage and gravity readings. Don't trust your memory. Write down a complete record of your battery's life history. Compare readings. *Know* what's happening!

Exide
TELEPHONE BATTERIES

***If you wish more detailed information, or have a special battery problem, don't hesitate to write to Exide. We want you to get the long-life built into every Exide Battery. Ask for booklet Form 3225.**

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

FARM TELEPHONES INW

The advertisement on the opposite page appears in farm publications during July and August. Advertising like this is appearing regularly in rural publications. It should help to strengthen the bond of understanding between farm families and the companies which supply their telephone service in these war days.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

INWAR DAYS

Quite a load!

LIKE this wagon and everything else around the farm, rural telephone wires are carrying quite a load.

Wartime production on the land and in the factory has greatly increased the use of the telephone — put an added burden on facilities.

If there should be an occasional delay in putting your call through, if you can't get just the type of service you want, we're sure you'll understand it is because war needs must come first.

BELL TELEPHONE SYSTEM

STEM

BUILT FOR HARD SERVICE

In actual service—as well as in the lab—Monotype Drop wire has shown its mettle. It stands up because it is made of the right stuff. From high tensile conductors to pitch and mica finish this famous wire is scientifically correct. Now that replacements must be held to an absolute minimum, operating men appreciate more than ever Monotype's ability to take vicious punishment throughout its exceedingly long life.

MONOTYPE DROP WIRE

MANUFACTURED FOR

AUTOMATIC ELECTRIC COMPANY

By GENERAL CABLE CORPORATION

DISTRIBUTED BY

AMERICAN
AUTOMATIC ELECTRIC
SALES COMPANY

1033 WEST VAN BUREN STREET • CHICAGO, ILLINOIS

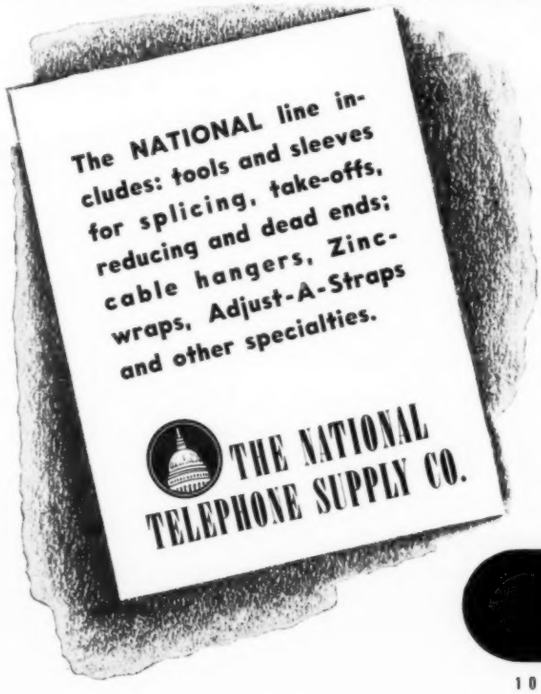
BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

LENZ
LENZ HAND SET CORDS
A modern cord for a modern phone. Appearance, performance, plus subscriber satisfaction. Super Quality.
Keep 'em talking with Lenz Cords
DISTRIBUTORS
H. H. VAN LUVEN
307 E. 3rd St.
Los Angeles
LEICH SALES CORPORATION
427 W. Randolph St.
Chicago
No. N 509 CORD

LENZ ELECTRIC MANUFACTURING COMPANY
1751 N. WESTERN AVE., CHICAGO, ILLINOIS, U. S. A.
"IN BUSINESS SINCE 1904"

. . . not just as good-BETTER!

SPLICES MADE WITH NICOPRESS ARE STRONGER THAN THE LINE ITSELF!


The NATIONAL line includes: tools and sleeves for splicing, take-offs, reducing and dead ends; cable hangers, Zinc-wraps, Adjust-A-Straps and other specialties.
THE NATIONAL TELEPHONE SUPPLY CO.

That's a strong statement but it's a fact. So, when your line needs repairs be sure to use Nicopress sleeves. Eliminate the hazards of noisy joints and possible line failure. You'll find maintenance costs less, takes less time—and in these days every saving is important.

Other well known National products are listed at the left. Telephone men now using them vouch for their dependability under all conditions of service.

DISTRIBUTED BY
AMERICAN
AUTOMATIC ELECTRIC
SALES COMPANY
1033 WEST VAN BUREN STREET · CHICAGO, ILLINOIS
BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

WHAT CAN WE REBUILD FOR YOU?

"AR" Rebuilding Service includes the factory rebuilding and modernization of manual boards, P.B.X.'s, automatic equipment, toll boards, telephones, etc.

AR Rebuilding Service is not confined to telephones, but includes manual and automatic equipment of all kinds and types, up to large central office switchboards. In most cases, substitute equipment can be supplied during the rebuilding period, if desired. Remember, AR rebuilding means a complete factory job of reconstruction and modernization, using latest methods and skilled, experienced telephone craftsmen. . . . Write for prices and full information.

THE MARK OF QUALITY IN REBUILDING SERVICE

AUTOMATIC ELECTRIC

ORIGINATORS AND DEVELOPERS OF STROWGER STEP-BY STEP MACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

MAKERS OF TELEPHONE, SIGNALING AND COMMUNICATION APPARATUS
ELECTRICAL ENGINEERS, DESIGNERS AND CONSULTANTS

Distributors in U. S. and Possessions:
AMERICAN AUTOMATIC ELECTRIC SALES COMPANY,
1033 W. Van Buren St., Chicago, U. S. A.
Export Distributors: AUTOMATIC ELECTRIC SALES COMPANY, LIMITED

THE PIONEER'S CORNER

The Independent Telephone Pioneer and His Responsibility

The Independent Telephone Pioneer is confronted with problems today which taxes his ingenuity far more than those he faced years ago.

For the first forty years after the birth of the telephone on June 2, 1875, his problems were many and varied; ranging from patent rights, dealing with multitudinous types of equipment, lack of standard operating practices, handicapped by the attitude towards the public, and finally the fortunate settlement of who was to operate where, along with a long distance arrangement which was in fact the beginning of a new era. However, most of these presented problems which were more or less local in scope.

Since the beginning of the first World War he has seen long distance service span the nation, next an Ocean and finally all Oceans and Continents. With this growth he has automatically assumed the responsibility to all users of his service that his efforts will not be the weakest link in what is now the greatest communications service in the world.

Thousands of young men have gone into the armed forces from the Telephone Industry. This means that an additional load will have to be borne by every Pioneer. The problem becomes more complex daily, in financing, employee-employer relations, engineering, supply and construction.

The Pioneer has proved himself to be a versatile fellow in the past and I am sure will undertake the additional responsibility with enthusiasm.

Kelly McNish
Bristol, Tenn.

(Ed. Note: If you wish to become a member of the Independent Pioneer Telephone Association, write for application blanks to J. K. Johnston, Lemcke Bldg., Indianapolis, Ind.)

DAN'L H. McNULTY *Conducts*

A MARKET PLACE for listing supplies that are wanted . . . or disposing of equipment or supplies of any kind that may be used by other Independent telephone companies . . . *or for reducing surplus inventories.*

Dan'l says: "Don't let a day pass without buying War Bonds or War Stamps."

The use of this page is open to anybody and everybody in the Independent Telephone business.

➡ **Make available to others whatever you have that you cannot use yourself.**

KEEP IN MIND that some equipment lying unused in your warehouse may be badly needed by some other Company.

Users of this Page should list their needs or stocks in detail, and material for disposal should be graded as follows:

NEW
SLIGHTLY USED
REUSABLE
WORN

—and priced accordingly.

Sellers using this Page should agree—
(1) That the material is as described.
(2) That it will be packed, tied or crated so as to reach destination in good order.

For the next three months the use of this Page will be FREE.

To reduce all possible costs, shipments will be made direct from seller to buyer. Billing can be made through this office, for which a nominal charge will be made.

Suggestions or comments will be welcome.

Write us what you have and we will list it to the best advantage.

WANTED

Four Frequency Ringing Machine.
Western Electric No. 84-D A.C. Relays.
Small Wall Switchboard—about 20 lines.
No. 9 Pony Glass Insulators.
⅝" x 10, 12 & 14 inch Thru Bolts.
⅝" Nuts only for Thru Bolts.
Reusable No. 14 Iron Wire.
Reusable 25 Pair and 50 Pair Cable.
Western Electric Transmitters—either Metallic or Grounded Style.

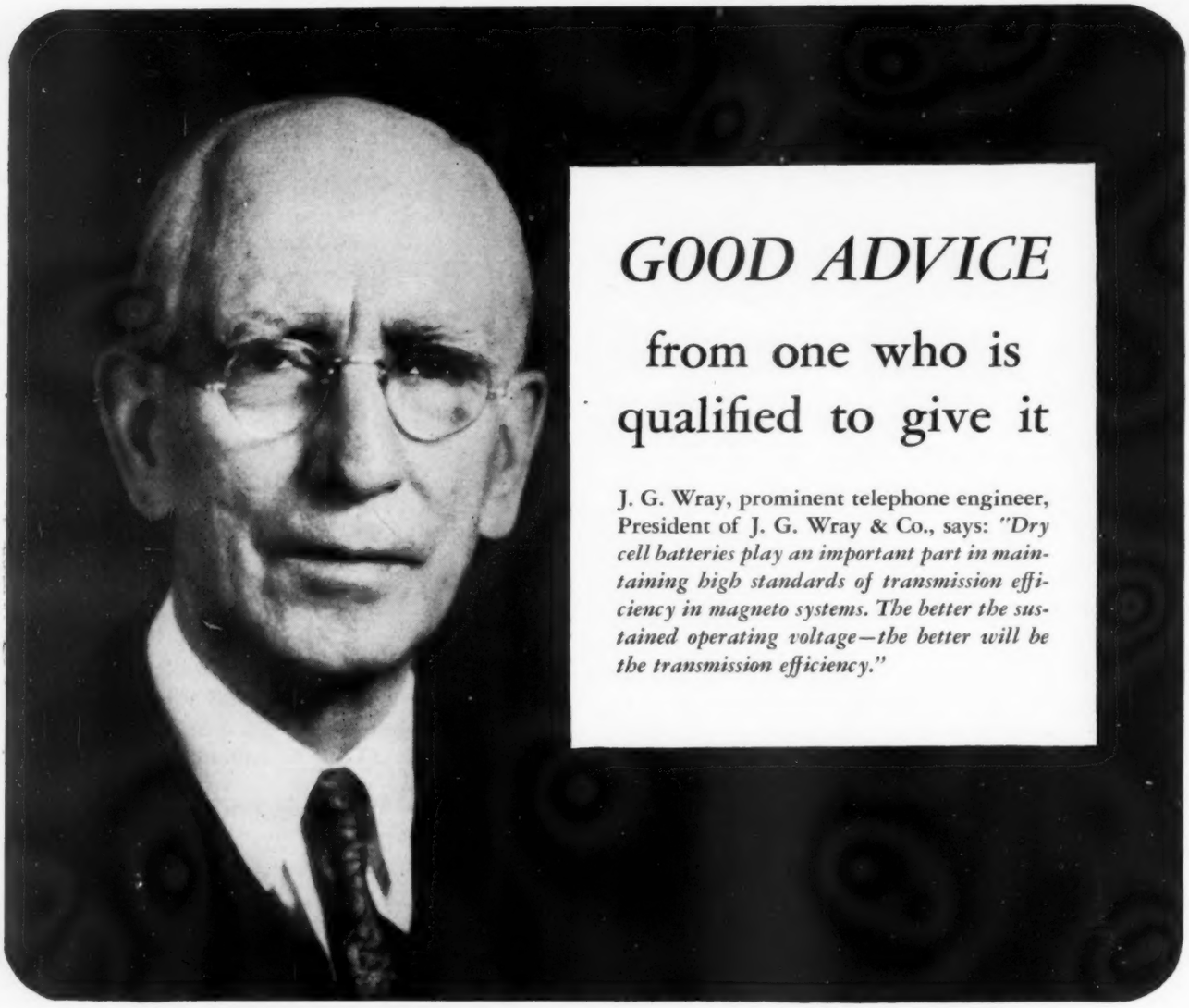
FOR SALE

Telering Ringing Machine—110 V—A.C.
Slightly used 10 Pin X-Arms.
Slightly used 3 Bolt Guy Clamps.
7 Line 2 Trunk 24 Volt Cordless P.B.X.
10 Line 5 Trunk Cordless P.B.X. for Magneto Service.
100 Line 24 Volt Common Battery P.B.X.
26 Pair Protected Cable Terminals (less stubs).
26 Pair Unprotected Cable Terminals (less stubs).
2000 No. 50 Two-piece Glass Transposition Insulators.
2000 No. 53 One-piece Glass Transposition Insulators.

ADDRESS ALL MAIL TO... **DAN'L H. McNULTY, Manager**

TELEPHONE REPAIR CO.

ROGERS PARK STATION **CHICAGO, ILLINOIS**



GOOD ADVICE

from one who is qualified to give it

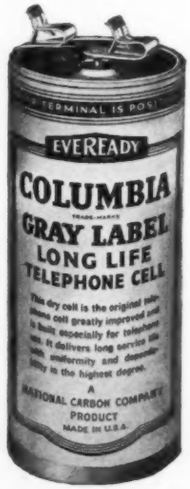
J. G. Wray, prominent telephone engineer, President of J. G. Wray & Co., says: *"Dry cell batteries play an important part in maintaining high standards of transmission efficiency in magneto systems. The better the sustained operating voltage—the better will be the transmission efficiency."*

CORRECT, MR. WRAY! And for many years, "Eveready" "Columbia" "Gray Label" Long Life telephone cells have been known to men in the telephone industry for their *higher sustained voltage*... contributing to peak transmission efficiency.

Developed and constantly improved in the world's largest dry battery laboratory ... made to a single standard of uniformity ... these cells *save money* for those who use them. That's why more independent telephone companies specify "Eveready" "Columbia" "Gray Label" Long Life telephone cells than any other brand! They are available at leading telephone supply distributors.

★ **SUSTAINED VOLTAGE**
★ **LONGER LIFE**
★ **UNIFORM QUALITY**

NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
UCC
General Offices: New York, N. Y.
Branches: Chicago and San Francisco



The words "Eveready," "Columbia" and "Gray Label" are registered trade-marks of National Carbon Company, Inc.

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by

ROLAND C. DAVIES
Editor, Telecommunications Reports

NOT ONLY is the communications industry facing a drastic revamping of its present structures through the telegraph merger plans first in the Western Union-Postal Telegraph fusion, and later the international cable and radiotelegraph fields, but the telephone industry also is apparently going to encounter during the war a form of "super-regulation" by governmental agencies in Washington which means governmental authorities are going to dictate many management policies. The Board of War Communications, headed by James Lawrence Fly who has just been reappointed to a 7-year term on the FCC, with the aid of that Commission is swiftly becoming the "super-regulatory" agency over the telephone industry.

War Powers Threat

With the sweeping war powers, given to the Board of War Communications, and with the practically unlimited war authority conferred upon the President, the entire telephone industry—whether Bell System or Independent—must keep closely attuned to every move made in Washington affecting its status. The spectre of government operation — despite past and present protestations by the New Deal leadership in Washington—seems more and more threatening as these regulatory controls loom on the horizon. However, to counter these possible New Deal threats to socialize communications through the "springboard" of the war there is a "silver lining" in the fact that the armed services—the Army and Navy—want the continuance of private operation of communications, especially in the telephone industry because of the excellent cooperation of the industry and of the fact of the United States under private ownership having the best service in the world.

Developments

The most significant developments now brewing in the Washington kettle can be recorded as follows:

The Telegraph Merger — Whether speedy action during July before Congress takes its projected summer recess on the pending permissive telegraph merger bill, passed by the Senate during the latter part of June and now before the House Interstate Commerce Committee, will occur is to be determined in the near future. The odds, because of the strong Administration support of the legislation, are that the House may be persuaded to take up the legislation before the recess and to pass it during the current month. However, even if the legislation was enacted by September, it will mean a long journey of company negotiations and FCC hearings and authorizations before Western Union and Postal Telegraph will be consolidated—probably a year's period would be necessary at the earliest to consummate the merger. For the telephone industry, in the event of a telegraph merger statute, the most significant phase of closest interest is how the commercial handling of the Bell System's teletypewriter exchange service, and possibly leased wires, will be transposed to the merged telegraph company. The transfer of any phase of the TWX service will undoubtedly be accomplished by negotiation and leases by the telegraph merger concern.

Education of Public in Conserving Telephone Usage for War Effort—To relieve the telephone service congestion, especially in long distance service, which has arisen in a few sections of the country where the war activities have been tremendously expanded, the Board of War Communications which is the former DCB has asked the telephone industry to conduct a program of education of the public through newspaper and radio advertising and bill inserts to curtail their toll and local exchange telephone usage when not related to the war activities as far as possible. The emphasis was laid upon long distance service with the ideas to be presented to the civilian public to forego toll calls as far as feasible until the off-peak periods of the day. While the BWC's main administrative committee, the Coordinating Committee, has been considering the subject of governmental priorities in long distance service with the effect of rationing the toll service to civilians, the Board decided to try out the voluntary educational campaign for public cooperation to the fullest extent before instituting any such step.

Telephone users have been asked to reduce the number and length of their local and long distance calls and especially to avoid the peak hours for telephone usage on non-essential conversations. BWC-FCC Chairman James Lawrence Fly has warned that "undesirable alternatives" might arise if the increasing load on the telephone system through non-essential governmental and public calls is not lessened. The BWC besides asking for public cooperation has urged the government agencies to curtail their long distance usage as far as possible with the elimination of non-essential calls. Toll calls have increased 50% throughout the nation and in certain areas like Wash-

At the recent Oregon-Washington Convention a lot of handshakes start the ball rolling. Pictured left to right: Louis Pitcher, J. W. Baker, Leonard Howard, A. T. West, Wade Dean, Clarence Johnston and Ray Dalton.

ington, D. C., with 165% and Norfolk, Va., with 245% as rises, Chairman Fly, while he noted there had been a tendency steadily increasing of calls being delayed through busy circuits.

The text of the BWC letter to the telephone companies follows:

"In recent months the Board of War Communications has been much concerned with the steady increase in the number of both toll and exchange telephone calls in many parts of the country. Already, important toll calls relating to the war effort must often suffer long delays. With the growing use of the telephone resulting from the expanding war effort, there is every reason to believe the situation will continue to grow worse in the toll and exchange fields. Shortages in materials and personnel are likely to prevent relief through expansion of facilities. Under these circumstances, the Board has concluded that remedial measures should be taken promptly.

"It is, therefore, requested that with respect to congested circuits all telephone companies undertake to work out and carry into execution plans to elicit the cooperation of the telephone-using public in eliminating in so far as possible all toll calls other than those relating to the war effort. If it is absolutely necessary to use the telephone, the necessity should be stressed of placing as many toll calls as possible during the off-peak periods occurring week days between 12:00 noon and 2:00 p. m., between 5:00 p. m. and 7:00 p. m., and between 9:00 p. m. and 9:00 a. m., local time. It is further requested that such educational plans also be carried forward to curtail the number and length of local calls.

"To inspire the necessary cooperation, the Board considers it essential than an intensive nation-wide campaign be conducted by means of bill inserts and through newspapers, the radio, and other suitable methods.

"You may rest assured of the Board's fullest cooperation in this essential undertaking."

It is highly important that this plan of voluntary cooperation by the public should produce results. Because if it fails, watch out for the rumblings of increased governmental controls and even threats of government war operation.

BWC-FCC Investigation of Telegraph Service. Even though the prospect of the telegraph merger would be helpful as a potential remedy, the BWC and FCC have decided that the exigencies of war have necessitated the immediate launching of a sweeping investigation into the speed of telegraph service to prevent message delays and to gear telegraph operations more closely to wartime needs. In announcing the inquiry, BWC-FCC Chairman Fly stated that the BWC requested the investigation following evidence that "telegraph message delays are impeding the war effort." No impediments "should be permitted to hold telegraph operations during wartime below the maximum level of efficiency," Chairman Fly stressed.

The investigation will be rushed to completion within three or four weeks by the FCC staff through sampling tests in important cities and telegraph relay points. It is planned to conduct the investigation through round-table informal conferences rather than hearings. Citing that the BWC had secured the fullest cooperation of telegraph company managements and of telegraph labor on wartime communication problems, Chairman Fly expressed confidence that the best efforts of the managements and labor in the telegraph industry will be enlisted to contribute to successful results from the inquiry. The investigation is to delve mainly into "the speed, accuracy and adequacy of telegraph service; possible improvement in operating techniques; new technical developments and their feasibility during the war period with shortages of materials; and the causes of any service inadequacies and possibilities of prompt remedy." While there is denial that the inquiry presages any aim for government operation of the telegraph services under war powers, some telegraph industry observers feel that the investigation — if it paints too black a picture of telegraph service—might turn out to be a "springboard" for taking over by the government.

Increased Regulatory Moves. The FCC is continuing its activity in conducting telephone regulatory investigations on rates and in imposing increased controls in the filing of applications on the different phases of telephone service to receive Commission approval. At the same time, a new government agency has entered the telephone regulatory field—the Office of Price Administration which is seeking to interpose its opposition against all telephone rate increases, even in the case of Independents in rural areas, on the ground that such rate rises are in conflict with the Administration's goal to curb inflationary tendencies.

The latest FCC move in telephone regulation was the ordering of an investigation into interstate exchange rates in 16 Iowa communities (where there is no state commission) on the ground that the Federal Commission has jurisdiction over such rates and that the Northwestern Bell which operates those exchanges had increased these interstate exchange rates since the June 1, 1934, enactment of the Communications Act. In harking back to the creation of the FCC, the new investigation which is to be the subject of a July 19 hearing at Davenport, Ia., would impose penalties on the Northwestern Bell directors and management under the Communications Act penalty provisions for the alleged failure to file tariffs with these interstate exchange rates. Northwestern Bell, it is noted, did file interstate exchange rates last May 29 after the FCC had called for such filings for Iowa, Delaware and Texas, all states without state commissions. This inquiry was viewed by some observers for state commissions as marking a move of the FCC to invade the exchange service regulatory field.

Convention Dates

Michigan Independent Telephone Association, Hotel Olds, Lansing, July 22 and 23.

Kentucky Independent Telephone Association, Henry Clay Hotel, Ashland, September 15 and 16.

United States Independent Telephone Association, Hotel Stevens, Chicago, October 13, 14.

South Dakota Telephone Association, Hotel Widman, Mitchell, Oct. 28.

Oklahoma Telephone Association, Mayo Hotel, Tulsa, Nov. 12 and 13.

Alabama Independent Telephone Association, Jefferson Davis Hotel, Montgomery, Nov. 12 and 13.

Missouri Telephone Assoc., Muehlebach Hotel, Kansas City, Nov. 16, 17 and 18.

Abandonment of Lines

THE other extension of FCC regulation came through a Board of War Communications order which empowered the Commission with the right to have telephone companies file notices of any abandonments or suspension of toll service, exchange service areas or rural subscriber lines except with 30 days notice to the FCC. The Commission then would notify the Chief Signal Officer and the Director of Naval Communications. This order—BWC Order No. 10—may produce a considerable hardship—as well as some impracticalities of telephone operation—upon the telephone companies. It means that carrier equipment cannot be shifted from one line to another to meet tele-

(Please turn to page 38)

Wire Chiefs TRAINING COURSE

Subject: *Cable Splicing*

SECTION XVI

(Prepared Expressly for TELEPHONE ENGINEER by the Lincoln Engineering School)

Fig. 1 — Cable Splicing Equipment.

General

THE splicing of telephone cable requires a somewhat higher type of craftsmanship than most other types of telephone work. In years past it was thought that it took many years of experience before a man was qualified to call himself a cable splicer. It is now recognized that with modern training methods individuals can be taught the art of cable splicing in a relatively short time. Like any other skilled craft, the novice should first read available texts on the basic theory and methods employed in cable splicing and should then observe in practice the actual splicing operations as performed by a competent splicer. This should be followed by practice on scrap cable, perferably under the guidance of a skilled splicer. Of several operations in cable splicing, most students find lead wiping the most difficult. Some exchange managers handle all of their own splicing with the exception of lead work which they turn over to a competent local plumber who is accustomed to wiping lead joints.

The Splicing Crew

CABLE splicing almost always requires a two man crew consisting of the splicer and a helper. The helper need not have much experience in cable work but should be an individual who is alert and conscientious as carelessness on the part of a cable splicer's helper could result in a serious accident.

The principal duties of the helper is to prepare the parafine and wiping solder for the splicer. He also assists in the identification of cable pairs by

Fig. 2 — Cable Splicing Material.

means of tone tests. He has many other duties such as passing tools up to the splicer, preparing the insulating sleeves, guarding against traffic hazards, etc.

Splicer's Tools and Equipment

CABLE splicing requires a number of specialized tools and equipment not ordinarily required in exchange maintenance. Cable work in the larger exchanges is expediated by the use of special cable construction trucks which are fully equipped with all necessary tools and materials necessary in cable splicing. Where the amount of cable in service is such that the cable splicer is required full time such cars are well worthwhile.

The principal tools and equipment needed for cable splicing are itemized and explained at right. (See Fig. 1)

Setting Up Splicer's Platform

IN considering the sequence of operations in making of an actual cable splice let us first study a typical aerial splice.

The first operation consists of setting up the splicer's platform. The extension ladder is run up at the point at which the splice is to be made, and a pulley attached to the strand. Using the hand line and pulley the platform is raised to the messenger by the helper on the ground while the man on the ladder attaches the supporting ropes or hooks to the messenger as shown in Fig. 3.

The guy ropes from the platform are then attached to nearby objects to stablize the platform and prevent its slipping. The man raising the platform should not stand directly underneath it due to the possibility of it coming loose and causing a serious injury.

After the platform is in place the splicer takes his position on it and the helper sends up on the hand line such tools as are needed. A small wooden box open on one side is used as a combination seat and tool and material box by the splicer when on the platform. Tools and materials should be kept in this box to prevent their rolling off the platform and injuring someone below. Fig. 4 shows the Splicers Platform in place.

Making a Straight Splice

There are three principal types of splices, namely, the **straight, bridge** and **butt** splice. The straight splice is one in which the conductors in two cables extending in opposite directions are simply connected together. A bridge splice involves the splicing of two cables extending in opposite directions and also a third cable whose

Item	Use
Kettle and ladle	Heating and handling parafine and splicing oil.
Solder pot and ladle	Heating and handling wiping solder.
Thermometers	Determining temperature of parafine and solder.
Furnace	Heating solder and parafine.
Blow torch	For use in fininshing a wiped joint.
Furnace shield	Shielding furnace or torch from wind.
Wooden platform	For use in aerial cable splicing.
Platform tent	Shelter for splicer during bad weather.
Cable car	For use in inspecting cable.
Pulley and hand line	For use in raising materials and tools to splicer's platform.
Treated canvas sheets	For covering temporary splices to prevent entrance of moisture.
Drip pan	To catch parafine and solder when boiling out cable and wiping blocks.
Shave hook	Preparation of lead sleeves and cable sheath prior to wiping.
Box wood dresser	Dressing the ends of lead cable sheath prior to wiping.
Sheath splitting knife	For opening cable, sleeves or sheath.
Extension Ladder	For use on aerial cable.
Electrician's scissors	For use in splicing cable conductor.
Cable saw	For use in splitting lead sleeves.
Hack saw	For use in cutting cable.
Hammer	For miscellaneous use.
8" Lineman's pliers	For general use.
Linesman's climbers and belt	For general use.
Treated wiping pads	For wiping lead joints.
14" file	Preparation of lead sleeves for wiping.
Large rasp	Preparation of lead sleeves for wiping.
Numbering dies	Marking sleeves with splicer's identifying number.
Sleeve punch	Opening up cotton sleeving after it has been boiled out.
Two operators telephone receivers with test clips	For identification of pairs and general testing.
Two operators head sets	For identification of pairs.
Tone test set	For identification of cable pairs.
Numbered tag boards	Temporary marking of cable pairs after identification.
Portable Wheatstone Bridge	For location of cable faults.
Wireless fault locator	For location of cable faults.
Pocket ohmmeter	For determination of fault resistance.

Materials Required in Cable Splicing

The usual materials required in cable work are listed below (See fig. 2)

Item	Use
Solder (40-60).	For wiping joints.
Solder (50-50).	Closing seams in lead sleeves and for test cuts.
Parafine.	For boiling out cable.
Splicing oil.	For use on pulp insulated cable in cold weather.
Solder (rosin core).	For soldering wires in terminals.
Sleeves (cotton 1/8th, 5/32nds, 1/4th and 3/8ths).	For insulating conductor splices.

Left to
Fig. 3B

Cotton tape (1" wide)	For protecting cable core from edge of cable sheath.
Tape (¾" and 2" wide friction)	For use in temporarily closing a sheath opening.
Muslin (36" wide)	For wrapping up the cable core after it is boiled out.
Muslin (4" rolls)	For wrapping up cable splices.
Gummed paper (2" wide)	For limiting the width of wiped joints.
Plumber's Candles.	For use as a flux on lead sleeves before wiping.
Bonding ribbon.	For use in bonding cable to messenger.
Lead sleeves.	For closing openings in cable.
Asphalt compound.	For painting taped openings in cable.
Sleeve supports.	For providing special support for sleeves in aerial cable.

conductors are bridged to those of the main cable. The butt splice is one in which the cables extend in the same direction and whose conductors are connected together. Figure 5 illustrates the three types of splices.

The straight splice is the simplest of the three types.

The first step in making a straight splice is to remove the proper amount of sheath so as to make available a sufficient length of core conductors so that the splice can be readily made. At the point where the cables overlap the length of sheath removed should be such that the sleeve extends 1½" over the sheath of each cable and as shown in Figure 6.

Before removing the sheath carefully scrape with the shave hook the sheath for a distance of about 4" back from the end of the splice, then rub a plumber's candle over the scraped surface so as to form a coating to prevent the lead from oxodizing before the joint is wiped. The object in scraping the sheath before the core is exposed is to prevent getting lead shavings into the cable conductors.

Removing Sheath at Splice Point

Next carefully indent around the sheath with a knife at the point at which it is to be removed. Do not cut completely through the cable sheath but just deep enough so that the sheath will break clean at the point of V indentation when it is bent back and forth. On small size cables it will not be necessary to split the sheath in order to remove it as it will usually break off at the point of indentation when bent back and forth a few times. On the larger cables it will be necessary to split the sheath starting at the point of indentation and working toward the end of the cable. Use the chipping knife and hammer in this operation, being careful to keep the point of the knife turned up in such a manner that it will not cut the cable conductors. After the cut has been completed raise one corner of the sheath near the point of indentation using the chipping knife or a screw driver. Then grasp the sheath with the Lineman's pliers and remove by rolling it back as shown in Figure 7.

After the sheath is removed, wrap two layers of boiled cotton tape over the end of the cable sheath and tuck approximately ½" of the tape back under the edge to protect the core

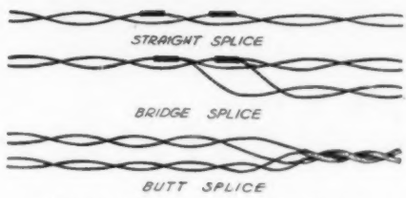


Fig. 5—The Three Types of Splices

of the cable. Place a lead sleeve of the proper size over the end of the cable and push it back out of the way. The sleeve should be scraped bright on the ends for a distance of several inches and coated with a plumber's candle prior to being placed over the cable.

Next remove the paper wrapping around the cable core preparatory to boiling out the cable conductors.

Boiling Out the Cable Core

INASMUCH as moisture, even tho slight, will lower the insulation of the cable pair and either interfere with of impair its usefulness, it is imperative that the paper insulated conductors be treated with hot parafine at all splice points to drive out any moisture that may get into the cable during the splicing operations. The parafine serves the dual purpose of driving out any moisture which may be present and also prevents the paper from absorbing moisture during the splicing process. Parafine also makes the conductors somewhat easier to strip.

It is highly important that parafine be heated to the proper temperature and that it be neither too hot or too cold if it is to be fully effective. If it is too cold it will not do a good job of driving out the moisture that may be present and if it is too hot, it may char the insulation or constitute a physical hazard due to tendency to catch fire. The

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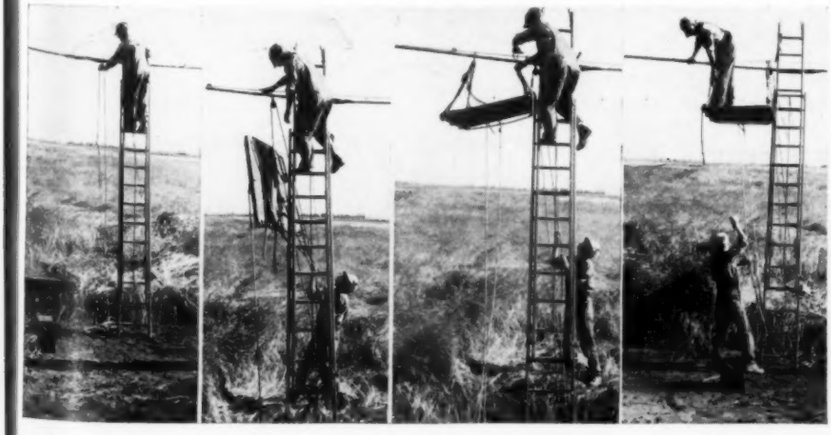

Left to Right: Fig. 3A — Setting up Pulley and Handline preparatory to raising platform. Fig. 3B — Raising platform with handline. Fig. 3C — Hooking platform onto strand. Fig. 3D — Tieing and adjusting guy ropes.

Fig. 4 — Use of two platforms at a point where a short section of cable is being cut in.

CAPITAL REQUIREMENTS of the Independent Telephone Company

By WALTER J. HERRMAN

(Editor's Note: We present in this issue Mr. Herrman's concluding article on the subject of capital costs in the Independent telephone industry.

Using a hypothetical capital structure typical of the average Class "A" company, the author arrives at an overall cost ratio of 8.8%, made up of 4.46% cost of bonds, 6.38% cost of preferred stock and 16.00% cost of common stock. The latter figure was developed from a study prepared by Standard and Poor's Corporation, covering average prices and earnings of five leading telephone company stocks during the last four years.

It is important to note that the figure of 8.8% which Mr. Herrman states to be the minimum cost of capital to the typical Class "A" Independent, is about 2½% more than the average company earned last year on its depreciated investment, and compares with earnings of only 4.9% on total investment in telephone plant.)

IN TWO preceding articles, an attempt was made to point out certain general economic principles which seem to be controlling in the operation of a regulated enterprise and to stress the possible adverse consequences which may result unless these principles are more generally recognized and respected in the conduct of the utility business.

The following discussion will endeavor to progress from generalities to particulars, and to present in this connection certain objective data which may be of benefit in assisting small Independent telephone companies to obtain at least partial relief from their financial problems.

Elements of Return

THE "return" received by a utility is that amount remaining after payment of operating expenses, depreciation, rents and taxes, but before interest, dividends, or additions to surplus. The line of division is purely arbitrary, but this is no objection, so long as the definition is exact and properly understood.

Of the above noted elements of return, the amount absorbed by interest and preferred stock dividends are contractual and subject to mathematical determination. While the amount remaining for common stock dividends and surplus is unknown in advance, the average, taken over a period of years, can be very definitely ascertained. And when the stock is publicly held and traded in the open market, it is also very simple to relate these earnings to the average price, thus obtaining a percentage known as the *earnings-price-ratio*. This ratio provides the most exact measure available of the earnings that investors (as a class) demand for each dollar of securities purchased. Stated in another way, it answers the company's question of how much it is necessary to earn to raise a dollar of new equity capital for the construction of additional plant.

Taken together, the amounts required to pay interest and preferred stock dividends, plus the application of the earnings-price-ratio (averaged over a period of years) to common stock and surplus, provide a close approximation of the total earnings that are necessary to maintain the credit, not only of a utility, but of any corporate enterprise.

Determination of Representative Earnings - Price - Ratios

INASMUCH as the majority of the small Independent telephone companies have been privately financed, particularly with respect to equity capital, it is impossible to calculate the earnings-price-ratios of such companies directly. The best alternative to a direct computation in these situations is to make a study of the earnings and market prices of the stocks of other companies which are reasonably comparable as to risk.

Common Stocks of Representative Telephone Companies †

PERTINENT STATISTICS

Prepared by Standard & Poor's Corporation

	Company "A"	Company "B"	Company "C"	Company "D"*	Company "E"
Average Earnings-Price -Ratio-1938 - 1942	7.1%	13.8%	11.7%	20.9%	29.7%
Total Market Value Of Common Stock	$2,327,000,000	$10,637,000	$4,104,000	$2,941,000	$632,000
Ratio Of Market Value Of Common To Total Capitalization	63%	15%	37%	29%	17%
Dividend Record	Continuous Since 1900	Continuous Since 1936	Missed Only One Year Since 1915	Initial Dividend In 1939 Regular Since	Irregular Dividends Since 1937

† Names of companies will be furnished on request.
* A registered holding company, about 30% of revenues derived from electric operations.

TABLE I

In order to provide interested operators with the best possible actuarial background along these lines, the writer requested Standard and Poor's Corporation, the world's largest organization devoted to the gathering and interpretation of economic statistics, to compile certain significant data, including earnings-price-ratios for the last four years, of five representative telephone company stocks for which information was available. The results of this study are shown in Table I presented herewith.

Examination of this data reveals that several variables are important in the minds of investors when selecting telephone stocks for investment. Without attempting to weigh the exact effect of each, the following observations may be noted:

(1) A large issue with broad listed markets commands a better price in relation to earnings than small stock issues with a limited market. Thus the stock of Company "A", having a market value of over two billion dollars, has the lowest earnings-price-ratio, whereas Company "E" stock, with a market value of only about six hundred thousand dollars, has the highest ratio, with the other companies falling fairly uniformly in between.

(2) When the percentage of the market value of the equity to the total capitalization is high, the earnings-

Required Return to Meet Capital Costs

TYPICAL CLASS "A" TELEPHONE COMPANY

Cost of Debt (Bonds, Notes, Etc.)

Issue	Par Amount	Sale Price	Amt. Realized	Annual Cost %	Annual Dollar Cost
20-Year 4 1/4% Bonds	$900,000	98	$882,000	4.40	$ 38,800
5-Year 5% Notes	100,000	100	100,000	5.00	5,000
			$ 982,000		$ 43,800

Cost of Preferred Stock

Issue	Par Amount	Sale Price	Amt. Realized	Annual Cost %	Annual Dollar Cost
6% Preferred	$500,000	94	$470,000	6.38	$ 30,000

Cost of Common Stock

Issue	Par Amount	Book Amount†	Annual Cost %	Annual Dollar Cost
Common	$600,000	$750,000	16.00	$120,000

SUMMARY

	Total Amt.	Annual Dollar Cost	Cost %
Bonds	$ 982,000	$ 43,800	4.46
Preferred Stock	470,000	30,000	6.38
Common Stock	750,000	120,000	16.00
Totals	$2,202,000	$193,800	8.80%

† Includes surplus.

TABLE II

price-ratio is low, and vice-versa. This is of course a simple reflection of the higher risks which attach to a thin or highly leveraged equity capital. Here again, Company "A", with 63% of its total capitalization represented by common stock, commands the lowest earnings-price-ratio, while Company "E", with 17% in common, has the highest ratio.

(3) Age and past performance also appear to be important. Company "A" takes first position in this classification also, while companies like "E" and "D", which were reorganized during the last few years and have not yet had an opportunity to establish a stable dividend record, require more earnings per dollar of market price to induce investors to make a purchase.

It is of course apparent that various of these factors counteract or reinforce one another in different companies. Thus, while Company "B" common is a large widely held issue, its stock ratio is lower and its dividend record is not as well established as that of Company "C" stock, and its earnings-price-ratio is correspondingly somewhat higher. On the other hand both Company "E" and Company "D" have higher stock ratios than Company "B", but presumably the factors of size and dividend record were sufficient to give Company "B" the lower market ratio. Company "A", being in the most favorable classification with respect to each controlling factor, has the lowest earnings-price-ratio.* The average earnings-price-ratio for the five companies is 16.6%, and this amount may be taken as a fair first approximation of the cost of common stock capital for a typical Independent telephone company. A proper final rate would presumably be higher, due to financing costs. Judgment also should be exercised in the use of this figure depending on the actual size, the equity ratio and the financial history of the company under consideration.

Required Return to Meet Overall Costs

TABLE II was prepared to illustrate the calculation of total return for a hypothetical company, applying its own cost of debt and preferred stock, together with the cost of equity capital as determined in Table I.

The particular financial structure used for this illustration is an approximate reflection of the average Class A telephone company, developed from an analysis of the combined reports of these companies tabulated by the United States Independent Telephone Association. Total capitalization of $2,250,000 par value is made up of 45% funded debt, (consisting of $900,000 20-year 4¼'s sold at 98, and $100,000 of 5-year 5% notes sold at 100), 22% of 6% preferred stock sold at 94, and 33% common stock and surplus. From the point of view of overall capital cost, these ratios closely represent the ideal financial setup which would normally be expected to result in minimum costs.* With a smaller amount of bonds, the large rate on the common stock tends to increase the overall rate, whereas with a larger amount of bonds, the saving in common stock charges is more than offset by the higher required rate on each class of security.

The calculations and results in Table II are self-explanatory. It will be observed that the cost of the bonds includes interest and amortization, and the amount realized rather than par value is taken as the capital base. In the case of the common stock, the book amount includes par plus surplus, since the latter represents the plowing back of a portion of the return element during previous years as additional investment. The rate of 16% used is probably low in view of the data developed in Table I.

Once this basic information is at hand, it becomes a simple matter to calculate the "end" figure of total return —in this instance $193,800. Applied to the total capital invested in the enterprise of $2,202,000, this is equivalent to a percentage cost of 8.8%. It is important to note that this latter amount is obtained through simple arithmetic, based on factual data throughout, and involving a minimum of discretionary manipulation of uncorrelated statistics.

Conclusions

COMPARISON of the above calculated return of 8.8% with the average of 4.9% earned by 144 Class A Independents in the year 1941 provides a rough overall measure of the inadequacy of telephone revenues received by these companies. True, the 4.9% figure includes return on depreciation reserves, but even after adjusting for this difference, the actual return still averages about 2½% short of the necessary economic minimum. Furthermore, the trend of net during the last few months indicates that unless prompt remedies are obtained, this gap will be substantially widened in 1942. Curiously enough, it should be noted that as the actual return is **increased,** the necessary economic return tends to **decrease,** so that if earnings could be generally built up to provide a median return of say 7% or 7½%, the market rate would automatically tend to decrease to a point where the two rates would again be properly in balance. Contrarily, when the actual return declines, the market rate tends to advance, to compensate for anticipated capital losses, and this is what has been taking place during recent years. It seems clear that until this very evident phenomena is recognized and taken into account by those charged with the management and regulation of our utility enterprises, the present increasing spread between actual and necessary returns can not be corrected.

Whether or not the foregoing procedure will supersede or only supplement orthodox rate making practices only time will tell.*

Certainly it has in its favor the elements of simplicity and sound common sense. On the debit side, it neglects to take into consideration changes in the price level which might result in reproduction costs either below or above original costs, as well as possible discrepancies between such original costs and investment as reflected on the books of the company. However, even in such cases, it would seem the "rule of necessity" should still be of value in determining maximum or minimum returns as related to financial needs, and that proper modification to allow for changing price levels and book variations could be dealt with as a matter of judgment. In the present emergency, in particular, most utilities would undoubtedly be well satisfied to receive enough in the way of return to maintain a sound credit position on the basis of their outstanding capital, and to be assured of a normal flow of new capital at reasonable prices.

* Attention should be called to the fact that the statistical data presented in connection with these various stocks is not necessarily related to their investment or speculative merit as such. Many very astute investors prefer to buy a small issue with a high earnings-price-ratio.

* See Public Utilities Fortnightly for July 4, 1940 "Capital Costs in the Public Utility Industry" which shows that total costs tend to reach a minimum with a funded debt of approximately 45% and rise substantially as the amount of debt is either increased or decreased from that optimum point.

* Probably one of the most comprehensive applications of these principles is to be found in the pending rate case of the Panhandle Eastern Pipe Line Company before the Federal Power Commission. The statistical material presented by Paul B. Coffman, witness for the Company, and the legal background supplied by Carl I. Wheat in his brief for the Company, should prove invaluable source material to anyone interested in this line of procedure.

Merge Exchanges

Claflin, Kans. — The telephone exchange at Beaver, Kans., 17 miles northwest of here is being merged with the Claflin exchange, the phones being connected with the local exchange, by the Western Light & Telephone Co.

Explanation of Order L-50 Issued by Communications Branch

IN response to numerous requests from telephone company operators throughout the country, the Communications Branch has issued an explanation of General Conservation Order L-50, as Amended, which regulates the installation of telephone equipment and establishes classes of essential users who are entitled to preference in obtaining telephone service.

The explanation, in the form of a series of questions and answers on various provisions of the order, is designed to clear up questions raised by operators.

The text of the explanation, together with the provisions of the order to which it applies, follows:

Explanation of Conservation Order L-50, as Amended

Paragraph (a) (1). "Definitions. For the purposes of this Order: 'Operator' means any individual, partnership, association, business trust, corporation, receiver, or any form of enterprise whatsoever, whether incorporated or not, the United States, the District of Columbia, any state or territory of the United States, and any political, corporate, administrative or other division or agency thereof to the extent engaged in telephone communication within, to, or from, the United States, its territories or possessions."

1. Does the definition of "Operator" include teletypewriter and telegraph facilities and equipment?

   No. It does not apply to such facilities and equipment.

Paragraph (a) (2). " 'Exchange Line Plant' means all that portion of an Operator's local wire or cable distribution system which extends from the central office main frame, exclusive of Drop and Block wires as defined in the Federal Communications Commission's uniform system of Accounts, Class A and B Telephone Companies Section 31.233 (a)."

2. Does "Exchange Line Plant" as defined under (a) (2) include interoffice trunk plant?

   Yes, if within a single area. Washington, for instance, is classified as a single exchange area.

Paragraph (b) (1). "Limitations on Changes in Equipment and Facilities. Unless expressly authorized by the Director of Industry Operations, all Operators shall: (1) Limit the replacement of all equipment and facilities to the essential requirements of maintenance, repair, or protection of service."

The purpose of this Paragraph of the Order is to prevent the unnecessary use of critical materials. It is intended to prevent the replacement of any piece of equipment or portion of the plant of a telephone company which is now in service (and capable of being continued in service) by other equipment or plant.

3. May one type of telephone transmitter be substituted for another type when required with a conference loud speaker arrangement where the existing transmitter will not function with the conference loud speaker arrangement.

   Yes, If it is determined beyond doubt that the existing transmitter would not provide service when the conference loud speaker arrangement is connected in the circuit. Under these conditions, a replacement of the transmitter is a requirement for service connected with the installation of the loud speaker arrangement and is not a "replacement."

4. May the cast-iron housing of coin collection boxes be replaced by steel housings on the assumption that such replacements will reduce the use of scarce materials in that the number of cast-iron housings broken into would be reduced?

   Such replacement is not permitted if the existing housings are in serviceable condition.

5. May a subscriber obtain a change of type of telephone set used by him (i. e. from desk or wall set to hand set)?

   No such replacement is authorized if the existing subscriber set is in serviceable condition.

6. Is it permissible to replace a coin telephone having a hand receiver with one having a hand set?

   Such a replacement is not authorized if the existing equipment is in serviceable condition.

7. May a black telephone be replaced by a telephone of different color?

"Just a moment, Private Simpson, it isn't necessary for your scouting party to phone the enemy for an appointment!"

Such a replacement is not authorized if the existing set is in serviceable condition.

8. May a loud ringing bell be substituted for a regular bell on the basis that the service is inoperative without the loud ringing bell ?

   Yes, provided that conditions have so changed since the issuance of the Order that the subscriber's service will be inoperative without installation of a loud ringing bell.

9. May a regular bell be substituted for a loud ringing bell when no longer required?

   Yes, if the conditions of Amendment No. 1 to Order L-50 are met.

10. May a cord on a telephone set be changed for a longer cord or for one of another design ?

    Such replacement is not authorized if the existing cord is in serviceable condition.

11. May a long cord on a telephone set be changed for a standard length cord ?

    Yes, if the conditions of Amendment No. 1 to Order L-50 are met.

12. May a loud speaker of one type be substituted for one of another type on the basis that the replacement is essential to the satisfactory operation of the installation ?

    Yes, provided conditions have so changed since the issuance of this Order that the existing loud speaker will not meet the requirements of ordinary service.

13. May a left-in telephone be replaced by another type of instrument requested by an incoming subscriber on the basis that the replacement affords him the same type of telephone instrument which he would receive had there been no left-in instrument ?

    Such replacement is not authorized if the existing left-in telephone instrument is in serviceable condition and this follows without regard to the way the subscriber's order is classified on the records of the Commercial Department of the Telephone Company.

14. Is it permissible to change the telephone instrument where such change is necessary to regrade in accordance with the requirement of Paragraph (b) (4) (iii) ?

    Yes. Replacement in such case is made necessary by other provisions of Paragraph (b) (1).

15. Is the replacement of a manual central office with a dial central office equipment permitted where the operator is unable to employ sufficient operators to adequately handle the service demand on that manual switchboard?

    Such replacement is not authorized if the existing central office equipment is in serviceable condition. In such case where unreasonable hardship is shown, an appeal should be made under graph (g) of the Order.

16. A central office switchboard is located in leased quarters. The lease expires shortly and cannot be renewed. Is replacement of this switchboard with another switchboard of the same size and type in other quarters permitted ?

    Such replacement is not authorized if the operator's telephone set is in serviceable condition.

17. May an operator's telephone set be changed for one of another type?

    Such replacement is not authorized if the operator's telephone set is in serviceable condition.

18. Is it permitted to replace a section of open wire line with cable for the purpose of eliminating an inductive interference condition due to a recently created power line exposure which makes the telephone service unsatisfactory?

    Such replacement is not permitted unless interference actually makes conversation over such lines inaudible. The test is not whether the service is unsatisfactory but whether it is inoperative.

19. May a closed type telephone booth be substituted for an open type booth where, because of the noise condition, the service provided by the latter is unsatisfactory ?

    Yes, provided it is determined that conditions have so altered since the issuance of the Order as to require a closed type of telephone booth to provide ordinary service. Such a measure is classed as a "protection of service."

20. May replacements be made in directory-holding equipment (tables, shelves, fasteners, etc.)?

    Such replacements are not authorized if such equipment is in serviceable condition.

21. May public or semi-public service with coin telephones be substituted for other types of main service using non-coin telephones?

    Yes. This is a substitution resulting from an actual change in service requirements and, so long as the conditions of Amendment No. 1 to this Order are met, such replacement can be made.

22. Are business subscribers who move within the same general locality, required to take the same type of equipment and service arrangement at the new address as they had at the old address by reason of the prohibitions against replacements contained in Paragraph (b) (1) ?

    No. The establishment of service at the new address is a new installation rather than a replacement. In this connection, however, it must be borne in mind that an application for service at the new address is subject to the ability of the telephone company to provide such service under the limitations of the Order and the business subscriber who moves to a new address is treated in the same way as a totally new subscriber who had never had telephone service. If there is a waiting list for telephone service, and facilities cannot be provided by the telephone company at the new address, under the terms of the Order, and the business subscriber is not within the service categories provided in Paragraph (b) (2) (i), such business subscriber may be denied any telephone service at the new location regardless of whether there is a left-in subscriber's set at the new address or not.

23. May a subscriber (business or residential) obtain a regrading of service from individual-line service or from two-party-line service to four-party-line service where ample facilities for such regrading are available but such regrading will require replacement of telephone instrument ?

    Yes, provided the existing central office equipment will permit such regrading without the necessity of making additions thereto and provided the terms of Amendment No. 1 to the Order are satisfied Moveover, such regrading should be consistent with Paragraph (b) (7) of the Order.

24. May replacements of equipment and facilities be made where this results in an increase of facilities, where otherwise authorized under the provisions of Paragraph (b) (1).

    No. Replacements are limited to such as do not effect an increase of existing facilities.

25. May relocations of plant involving replacements, be made to sat-

(Please turn to page 43)

The Type R Sub-Station Protector which has unusualy high insulating value and great tensile strength because of its moulded Bakelite base. Equipped with heavy studs for connecting drop wires and ground. All structural parts grounded. Heavy steel frame replaces outmoded, fragile ceramic.

KEEP 'EM TALKING

NO PHASE of the entire Victory Program is now more important than to "Keep 'Em Talking." The quick communication of orders and interchange of information for the coordination of all industrial, military and civil activities is vital to the quick organization of an "all out" war effort. It is therefore important that we equip military camps and cantonments, defense industries and civilian air raid defense warning systems with communication facilities that will not fail.

The Type R Trans-Mount Sub-Station Protector is one of scores of Cook products that have proven their ability to "Keep 'Em Talking" under all conditions. A special feature of the Type R is the Dual Gap Protector Unit which has Air Gap Arresters on both the instrument and line side of the fuse providing double protection for property, linemen and subscriber in the event of a sustained power cross. The Dual Gap Protector Unit is demountable for quick repair, replacement or removal from idle party lines. It is interchangeable in all equipment divisions of the Cook Trans-Mount System of Protection and Distribution.

Write for further details concerning the Type R Sub-Station Protector and the Trans-Mount System of Protection and Distribution. All Cook products are distributed by telephone equipment manufacturers and supply houses.

COOK ELECTRIC COMPANY

2700 SOUTHPORT AVENUE CHICAGO

(Left) The Directors and Officers of the Washington Association: Standing—Phil Shintaffer, Lynden; Burns Brown, Kennewick; Louis Pitcher, of the U.S.I.T.A.; Wade Dean of Hood River, Oregon; Ray Dalton of Everett; R. E. Rudolph of Ellensburg. Seated—David Burr of Kirkland; D. M. Yost of Edmonds; G. J. Stover of Mt. Vernon, newly elected vice president of W.I.T.A.; and J. W. Baker, Spokane, secretary W.I.T.A. (Center) The Bosses: George Gaines, vice president of Washington Independent Telephone Assn., and D. O. Hood, vice president of the Oregon Independent Telephone Assn., jointly presided at the meetings of this joint convention in the absence of President E. R. Hannibal of the W.I.T.A., and due to the death of Charles E. Wells, late president of the O.I.T.A. (Right) Charles Sim, C. E. Johnston, and George A. Walker listen while R. E. Rudolph tells about his new brand of pipe tobacco.

Oregon, Washington & Idaho Independents Hold Joint Convention

IF THE combined speech and thought of one hundred and fifty telephone executives for two days could be condensed in a sentence, the motif of the Oregon-Washington Independent Convention might be written—"At all costs help the Army and Navy to win the war—and get better rates so that we shall not lose everything else after the war!"

The convention of Oregon and Washington Independents, with a sprinkling of visitors from Idaho and from the National association, opened at the Portland Hotel in Portland Friday, June 12th and closed the day with separate business meetings.

New officers elected by the Oregon association were:

President, D. O. Hood, Portland; Vice-President, T. J. Wells, Redmond, and Secretary-Treasurer, L. A. Gritten, Forrest Grove.

The Board of Directors are: Ethel A. Bauman, Lebanon, Lowell Brown, Silverton, R. D. Johnson, Dayton, Fred MacGougan, Marshfield, George Muhle, Hood River, and W. A. Schaefer, Portland.

The Washington association re-elected President E. R. Hannibal; Vice-President, G. J. Stover; Secretary-Treasurer, J. W. Baker.

Directors are: Burns Brown, Kennewick, David Burr, Kirkland, Ray Dalton, Everett, W. H. Dean, Hood River, George S. Gaines, North Bend, Lloyd Gates, Bothell, C. E. Johnston, Spokane, R. E. Rudolph, Ellensburg, Phil Shintaffer, Lynden, D. M. Yost, Edmonds.

In the absence of President Hannibal, who was unable to attend owing to illness, George Gaines, vice-president of the Washington association, shared the gavel with Oregon vice-president, D. O. Hood.

An address of welcome was made by **Mayor R. E. Riley of Portland.**

Mr. Robert C. Hummel, Technical Adviser, West Coast Telephone Co., spoke next on "Wartime Developments of Importance to our Industry." He said, "Wire communications have been so thoroughly assimilated as a part of our economic, social, and political fabric, as to become an essential part thereof; and by the very nature the telephone has become the popular method of wire communication."

An address on the "Telephone Industry in War Effort" was delivered by **Mr. Frank Dresslar,** vice-president and general manager of The Pacific Telephone & Telegraph Company.

He stated that good service is more important and the problems of maintenance and of protecting the owners of the business are greater than ever before. Above all, our chief objective is "To assist as best we may the armed forces of the United States to win the war at whatever cost or sacrifice that may involve."

The telephone companies' contribution to the war effort can be divided into four activities:

1. The service given to the armed forces and other war agencies.
2. Safeguarding and protection measures necessary to apply.
3. Conservation of materials vital to armament.
4. General assistance and activities in behalf of the war forces.

(Please turn to page 53)

The folks gather for food at the recent Washington - Oregon Convention. Right, D. O. Hood, president of the Oregon Assn.

All pictures courtesy G. E. Krieger, Everett, Wash.

Voices from home deserve faithful transmission.

GENERAL CABLE

GENERAL CABLE PAPER TELEPHONE CABLES

SATISFACTION with telephone conversations is first of all a matter of faithful transmission. This requires a vast amount of skill in the design and construction of the telephone cables. General Cable Paper Telephone Cables are designed and built to insure satisfaction over a long period of years.

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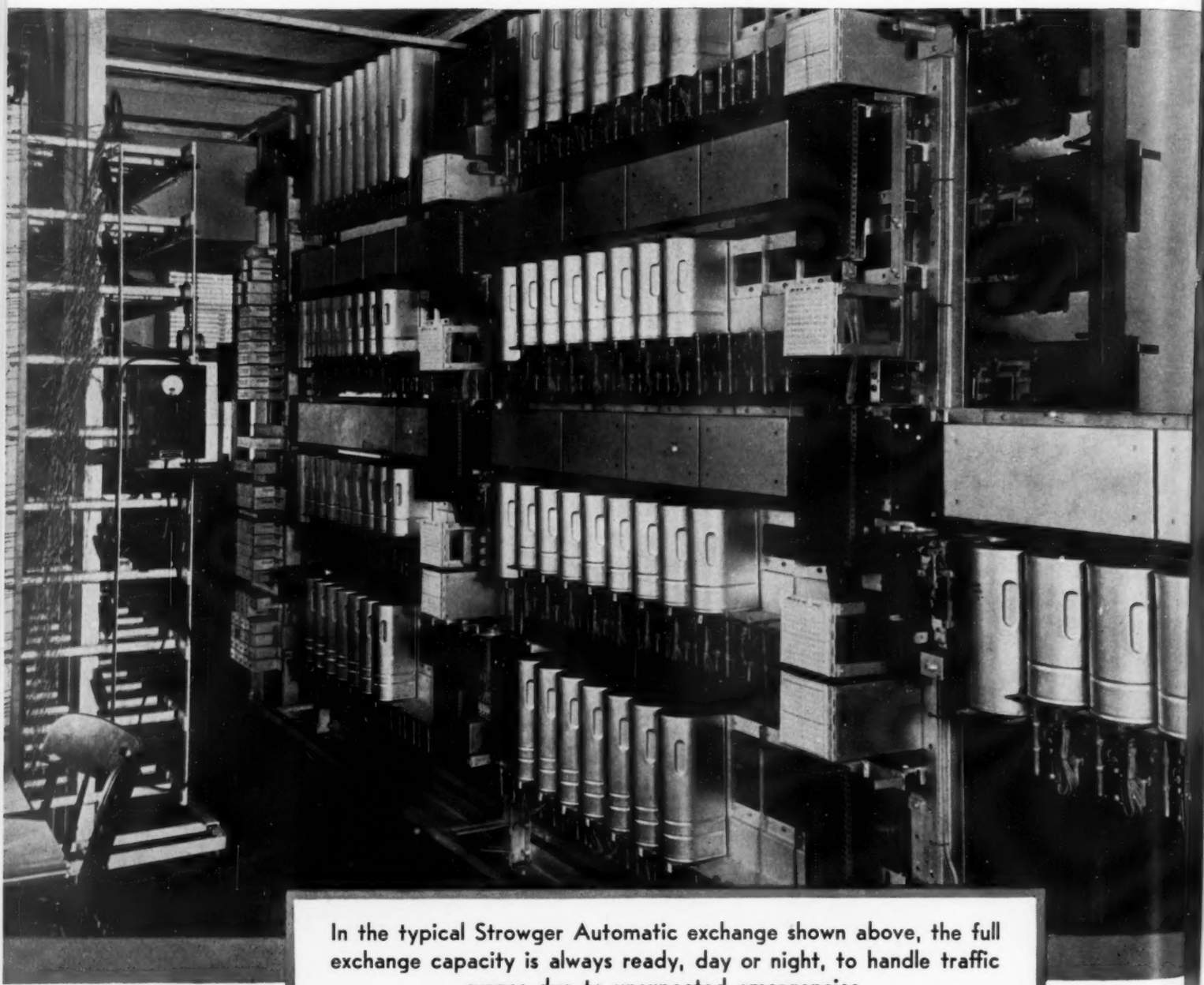
BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

Strowger Equipment kn



In the typical Strowger Automatic exchange shown above, the full exchange capacity is always ready, day or night, to handle traffic surges due to unexpected emergencies.

knows no "Quitting time!"

Undertaking the most gigantic war effort in the history of the world, all America is being urged to pitch in with all we have twenty-four hours a day, seven days a week!

Telephone companies everywhere, of every size, will subscribe to this purpose with grim determination. Those using Strowger Automatic equipment are doubly fortunate, since for them 100% availability, twenty-four hours a day, will be nothing new. Strowger Automatic equipment has always provided that kind of service—has always been engineered so that the full capacity of the exchange is ready for instant action without warning, night and day.

Then, too, since Strowger Automatic operation requires a minimum of operating personnel, it stabilizes operating costs at a low level—while permitting operating companies to maintain their service at the high standards required by the speedy, efficient American way of getting things done. In this way, Strowger Automatic service is contributing its share to the swelling tide of exertion and production which will eventually sweep the Axis into final defeat and oblivion.

AUTOMATIC ELECTRIC

ORIGINATORS AND DEVELOPERS OF STROWGER STEP-BY-STEP MACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

MAKERS OF TELEPHONE, SIGNALING AND COMMUNICATION APPARATUS
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JASON GEORGE CRANE

Independent telephony lost one of the most prominently known men in its industry in the death of Jason George Crane, 62, when he succumbed to a heart attack at his home in Kansas City, June 18. He was vice president of Theodore Gary & Company and during his long and honored career was affiliated at various times with over thirty telephone companies. His death was not expected although he had been ill a week prior to his passing.

Mr. Crane enjoyed a large friendship among Independent telephone men and immediately following his death this publication received many letters from those friends giving us interesting details of his service to telephony. Known for his allegiance to the telephone industry and his many years of service to it Mr. Crane showed in many ways his versatility as an operating telephone man and executive. We too, have lost a friend and grieve with the industry on his passing.

During the past winter Mr. Crane had occasion to demonstrate his actual love to the industry and his family. His son, Allen, manager of the Portsmouth (Ohio) Home Telephone Company became ill and his absence was necessary for some time. Mr. Crane immediately was "pinch hitter" and temporary manager for Allen, moving to Portsmouth temporarily. This incident is only one of many that shows why so many telephone men, large and small, loved and will miss him.

His service to the telephone industry had a beginning in 1903 following his graduation in electrical engineering from Purdue University. He joined Western Electric as a student apprentice. Serving Western Electric in various capacities by 1907 he had gone through most departments and served three years in equipment engineering. Most of his early service was in New York and in 1907 he was transferred to the Hawthorne works in Chicago.

From this early experience, Mr. Crane had also gained confidence and was able to demonstrate the leadership that gained him the position as superintendent of equipment and maintenance for the Pioneer Telephone & Telegraph Company in Oklahoma City during 1909. In 1910, when the Southwestern Bell Telephone Co. was organized he was transferred to general headquarters in St. Louis.

In the succeeding few years Mr. Crane entered telephone work for Independent interests and during 1915 was named general plant superintendent of the Kansas City Home Telephone Co. when he became associated with Theodore Gary and Co. Starting in 1916 he spent the next four years with the Texas Telephone Company at Waco, Texas, returning to the Kansas City company as vice president and general manager in 1920. At that time there were two systems operating in Kansas City and he was placed in charge of the general plant for unifying the Kansas City company and the Southwestern Bell Telephone Co. The resulting consolidation was the largest unification of telephone properties ever undertaken and completed at that period. After consolidation he was named vice president and general manager of the new company.

In 1925 when the ownership of the Kansas City Telephone Co. was assumed by the Southwestern Bell Mr. Crane was selected as vice president and head of the operating department and also became a member of the board. In 1926 he resigned his position to devote entire attention to duties as vice president of Theodore Gary and Co. and their affiliated telephone companies.

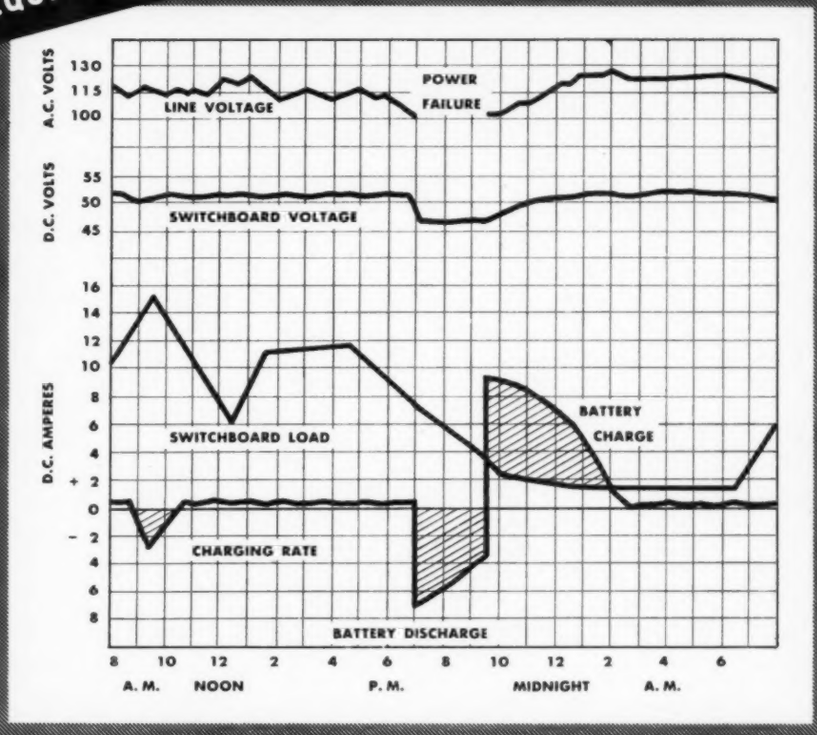
Following organization of the Telephone Bond and Share Co. Mr. Crane served as an executive and later as president for several years. In 1926 he was made first vice president and a director after the acquisition of the British Columbia Telephone Co. by the Gary group.

During his life time Mr. Crane served at various times as chairman of Automatic Electric Company, president of Anglo-Canadian Telephone Company, vice president of Associated Telephone and Telegraph Co. and chairman of the Keystone Telephone Co. of Philadelphia. In July of 1928 friends commemorated his twenty-fifth anniversary in the telephone industry by giving a dinner attended by prominent telephone men of this country. Active in the affairs of the United States Independent Telephone Co. Mr. Crane served as a director from 1933 until 1939. He was also a member of the Independent Pioneer Telephone Association.

Funeral services were held June 20 with V. E. Chaney, G. L. Crawols,, Frank Spring, Emmett Swanson, L. R. Gates and J. A. Moore as pallbearers. Honorary pallbearers were: Theodore Gary, A. F. Adams, H. L. Gary, L. E. Durham, C. A. Bennett, E. C. Blomeyer, C. A. Ulffers, G. K. Gann, Frank Eldridge, W. H. Loomis, R. B. Still and Cliff Jones.

Mr. Crane leaves his wife, Mrs. Margaret Sheron Crane, Kansas City; a son Allen Sheron Crane, and two grandchildren, Sondra Crane and Sheron Crane all of Portsmouth, O. A daughter, Miss Margaret Lucille Crane died in 1939.

RAYTHEON RECTICHARGER MEETS EVERY REQUIREMENT FOR TELEPHONE DC POWER



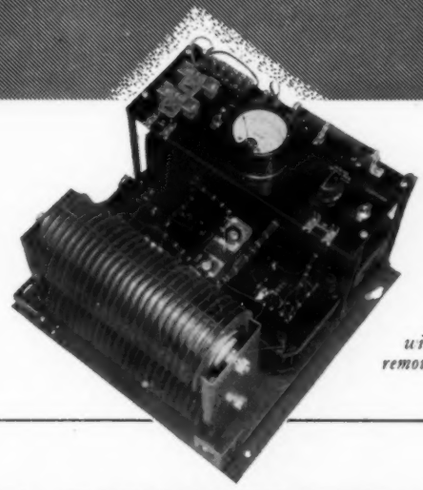
Everyone wants Constant Potential Charging because it insures the best possible telephone operation and because it charges the storage batteries under conditions favorable to maximum life.

The chart shows how the Raytheon RectiChargeR meets every telephone requirement for Constant Potential DC under all operating conditions.

1. NO LOAD
2. VARIABLE LOAD
3. OVERLOAD
4. VARYING AC LINE VOLTAGE
5. AC INTERRUPTION

All of this is accomplished without moving parts and makes the RectiChargeR ideal for unattended operation.

We will be very glad to send you further information or answer any specific questions that you may want to ask.



View with cover removed

RAYTHEON

Manufacturing Company

134 Willow Street, Waltham, Massachusetts, U.S.A.

Conducted by B. C. BURDEN, Technical Editor

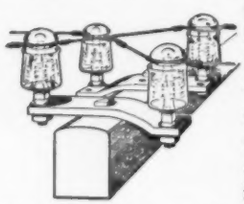
Line AND Desk

Q. How can we determine whether it would be advisable to bury lead cable directly in the ground, that is, without any protective covering ?

A. Soil analysis by a competent chemist should reveal whether or not a particular soil would be likely to be highly corrosive to lead cable. However, experience has shown that it is not advisable to place lead cable directly in contact with the earth. We would recommend that either a jute armored cable or ordinary cable coated with hot asphalt held in place by tar paper be used.

Q. How can a point type transposition be made on a crossarm lead?

A. This requires a two piece ½" x 3" steel bracket equipped with four steel pins. The brackets are fastened to the cross arm with ⅝" x 6½" machine bolts as shown in the illustrated Figure. Point transpositions can also be made with one piece type brackets.



Q. Explain the difference between the two-wire and the four-wire type toll circuit.

A. A two-wire circuit is any circuit that carries transmission in both directions and accordingly requires the use of a two-wire two-way repeater. A four-wire toll line is one that utilizes two separate circuits, one for each direction of transmission. In this type of toll circuit the repeaters need not be two-way as they are required to amplify in only one direction, hence they can be made to operate at higher gains with greater freedom from singing and difficulties. Four-wire circuits are used primarily on long haul circuits.

Q. Do telephone voice currents travel over all types of telephone lines at the same velocity of speed ?

A. No they do not. Voice currents travel much slower over loaded cable circuits than over open wire circuits. For example, voice currents travel at the rate of approximately 178,000 miles per second on a non-loaded copper open wire pair. On the heavily loaded 19 ga. cable pair the same voice waves would travel only 85,000 miles per second.

Miscellaneous

Q. Is #18 (AWG) drop wire considered satisfactory for general use ?

A. Yes. In the past it has been customary to use #17 AWG drop wire, however many of the larger companies have now standardized on #18 wire. While #18 offers a higher transmission loss than #17 wire, considering the short length of drop involved in most cases, this is not a serious factor.

Q. What is the breaking strength of two-conductor drop wire?

A. The breaking strength depends on the type of material and the gauge. In general #17 drop wire will have a breaking strength of approximately 200 lbs. per conductor and #18 170 lbs. per conductor.

Cable Construction

Q. Can you supply a table showing the size conduit for carrying various size cables ?

A. The following table gives the conduit size required for cables of various sizes and different types of bends.

Q. What size messenger should be used to support a 50 pair 24 ga. cable extending between two buildings and where the span is only 60 feet ?

A. 2200 pound strand is satisfactory for this purpose.

Q. When pulling in cable how much over lap should be left at splice points ?

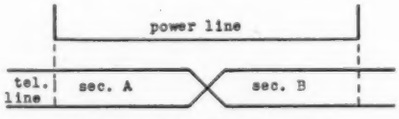
A. It is customary to leave 36 inches overlap at splice points.

Q. How many thru bolt clamps should be used on each end of a 16,000 lb. down guy ?

A. Two three bolt guy clamps should be used.

Q. We have a 2-wire toll line which parallels a single phase power line for 1 mile. The toll line picks up considerable noise from the power line. What is the least number of transpositions we can use to eliminate this interference ?

A. The simplest transposition plan would be to place one transposition at the midpoint of the line, that is, at the half mile point, thus giving two sections of equal length with the transposition in the middle. This should effectively neutralize the noise from the power line. This is illustrated below.



Note--section A and B should be of equal length to balance induced voltage.

Number of Pairs in Cable	Maximum No. of 90° Angle Bends	Minimum Radius of Bend(Inches)	Maximum Distance Between Outlets (Feet)	Minimum Size of Conduit (Inches)
11	2	6	100	1
16	2	12	100	1
26	2	12	100	1¼
51	2	12	100	1½
101	2	12	100	2
202	2	18	100	3
More than 202	2	24	100	3½

IMAGINE GENERALS GIVING COMMANDS by SMOKE COLUMNS

Indians Signal by Manipulating Smoke Columns

HISTORY records how the early American Indians communicated by a clever manipulation of smoke columns. On the limited fronts which their warfare covered, such crude methods were adequate.

But, today, when war fronts cover the entire world—when aircraft must communicate with their bases—when tanks must keep in touch with field headquarters—when leaders must communicate over distances of thousands of miles, think how inadequate smoke signals would be.

The field of communications has kept pace with the changes and developments of warfare. So it is only natural that Stromberg-Carlson, whose vast research and engineering organizations have worked in the development of communications for 48 years, should be in the Government's service. The company's facilities are devoted to supplying the communication materials our war effort requires. • Every employee is doing his utmost to *"Help Stromberg-Carlson Help America—There Is Nothing Finer!"*

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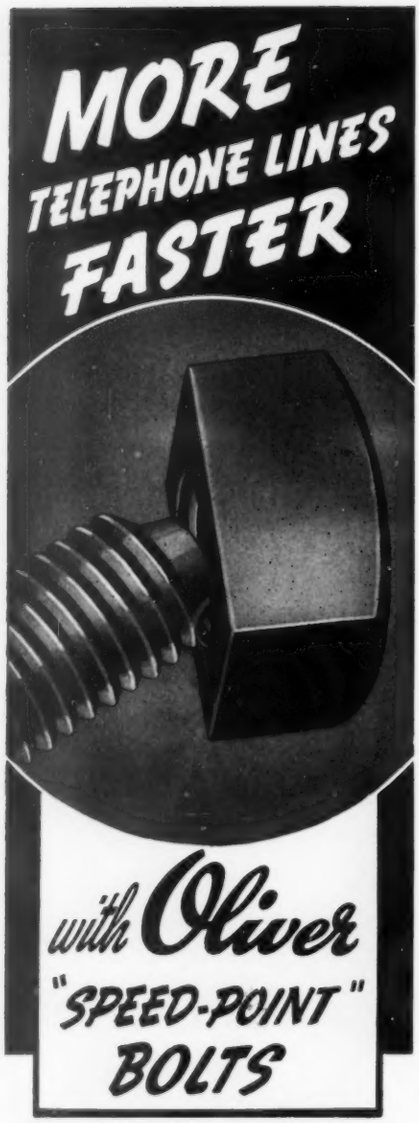
MAKERS OF VOICE TRANSMISSION AND VOICE RECEPTION APPARATUS FOR FORTY-EIGHT YEARS

Number 2 in a series showing old methods of war communication



"Speed-Point" Bolts drive faster, speed-up threading-on, step-up assembly schedules and save money on salvage work, too. You can get prompt delivery on Oliver "Speed-Point" Bolts from leading electrical supply jobbers in principal cities.

OLIVER
IRON AND STEEL
Corporation
Makers of Pole Line Hardware Since 1894
PITTSBURGH, PENNSYLVANIA

Highlights of the Communications News

(Continued from page 20)

phone operational needs without 30 days advance notice which would be an impossibility in most cases together with being a foolish application.

The text of the BWC Order No. 10 which applies to all telephone companies follows:

"WHEREAS, The Board of War Communications (herein called the Board) has determined that the national security and defense and successful conduct of the war demand that the Government have knowledge of certain proposed abandonments or suspensions by telephone and telegraph companies:

"NOW, THEREFORE, By virtue of the authority vested in the Board by Executive Order No. 9089 of March 6, 1942, governing the use, control, supervision, inspection or closure of facilities for wire communication by the Department of War, Department of Navy or other agency of the United States Government;

"IT IS HEREBY ORDERED:

(1) That no telephone company shall
  (a) abandon all or any portion of a toll line, whether intra-state or interstate, or
  (b) suspend local service operations in an exchange area, or
  (c) abandon all or any portion of a rural subscriber line affecting the sole means of service to the community;
(2) That no telegraph company shall abandon
  (a) all or any portion of a telegraph trunk line whether intra-state or interstate, or
  (b) any branch or main office:

"Unless such telephone or telegraph company shall first have given written notice to the Federal Communications Commission of such proposed abandonment or suspension, in accordance with such regulations as said Commission may prescribe, at least thirty days before such abandonment or suspension.

"IT IS FURTHER ORDERED, That the Federal Communications Commission shall promptly bring all such notices to the attention of the Chief Signal Officer of the Army and the Director of Naval Communications."

Courtesy—"Long Lines"

TEMPORARY IMPASSE

OPA and Phone Rates

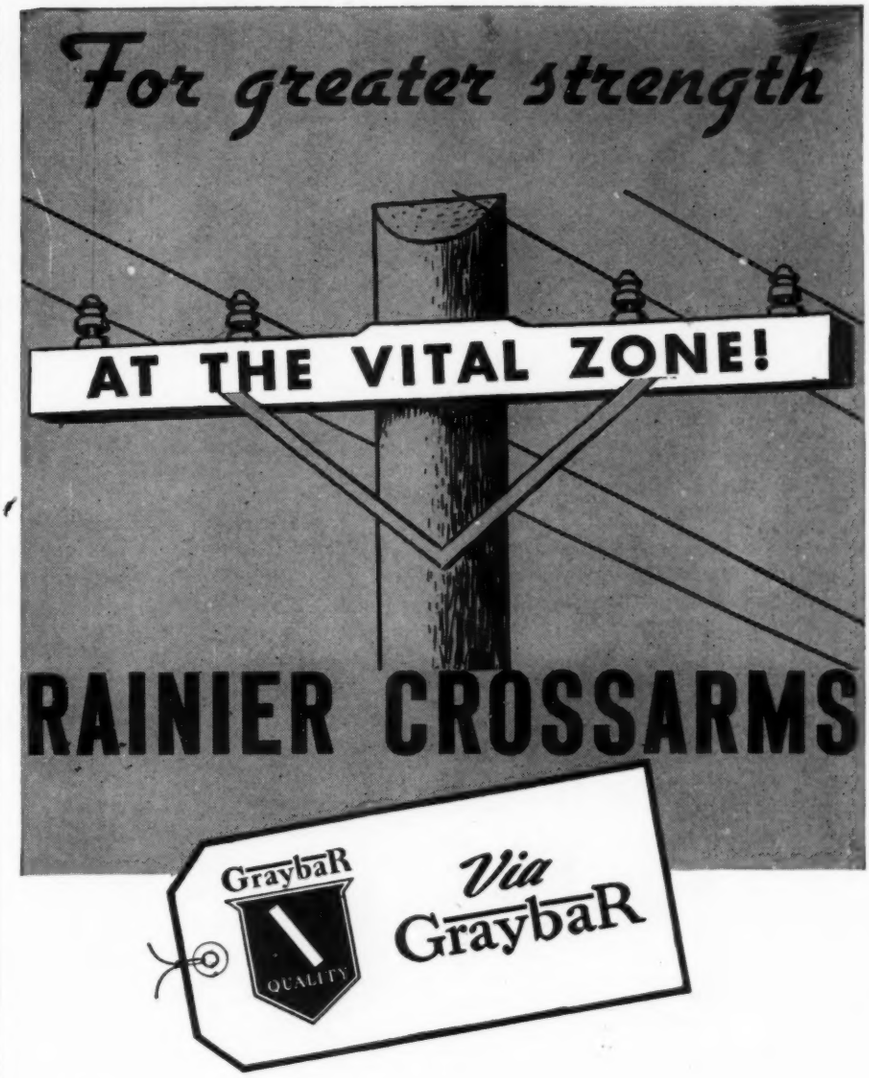
THE position of the OPA in regard to telephone rate increases was explained at the recent meeting of the Executive Committee of the U.S. Independent Telephone Association by Harry R. Booth, who is the OPA Utilities Counsel. While he cited the OPA under its Price Control Act specifically excludes utility and communications rate regulation, Mr. Booth stressed that the OPA felt rate increases must be retarded during the war so as to prevent inflationary tendencies. Mr. Booth laid special emphasis on the thought that telephone companies should not — as in peace time — be authorized to pass onto the consumer increases in Federal tax burdens as operating expenses and thus increase their rates. Mr. Booth cited that the OPA is now engaged in exploring policies on rate matters in the communications and utility fields preliminary to determining its own stand and was anxious to cooperate on the problem with state commissions and the telephone industry. He particularly noted that the OPA was anxious to aid small businesses like Independent telephone industry.

Draft Classifications

BY the end of July it is anticipated that the War Manpower Commission, together with the Selective Service System, may determine the various classifications of telephone work of a skilled character, requiring lengthy training, which should be given priority ratings in the allocation of manpower and should be granted deferment preference by the Selective Service. The Board of War Communications through its advisory and technical committees is now engaged in a survey of the telephone industry labor situation, while the U. S. Employment Service is likewise studying whether and where telephone labor shortages have arisen. The BWC is to certify its findings to the War Manpower Commission and Selective Service System which render the final decision on priority classification and draft deferment preference.

Independent Telephone Labor Unions

IN A highly important judicial decision embracing employer-employee relations in the telephone industry, the U. S. Circuit Court of Appeals for the Fifth Circuit at New Orleans in an unanimous finding held that the National Labor Relations Board had abused the discretion of its powers in disestablishing the Southern Bell Employees' Association on the charge of company domination and had permitted itself to be enlisted "as accuser" by a



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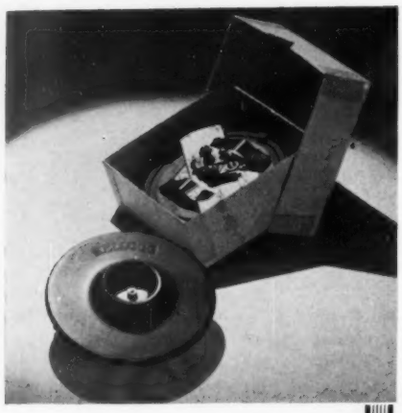

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national labor organization, the International Brotherhood of Electrical Workers (AFL), to aid the latter union's organizational campaign among the employees of the Southern Bell.

The Circuit Court of Appeals vacated the NLRB's order for the disestablishment of the Southern Bell Employees' Association with the finding that there had been no evidence to sustain the NLRB's decision. The Circuit Court's opinion was handed down by Judge Hutchinson and was unanimously agreed to by the two other Circuit Court Judges, Holmes and McCord, who heard the case.

The policies and relations of the Southern Bell management in regard to its employees were lauded by the Circuit Court as earnestly and completely abiding by the obligations of the Wagner National Labor Relations Act, and the NLRB was held to have been completely in error in its charges of company domination of the Southern Bell Employees' Association. The employees of the Southern Bell, the court opinion stated, had freely and without any interference, coercion or even persuasion by the company selected their bargaining representative in the form of the independent Employees Association.

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Another Labor Decision

AT THE same time, the War Labor Board in Washington rendered another decision of great significance to telephone companies and their employees when Dr. Edwin E. Witte, WLB Arbitrator, held the United Telephone Organizations, independent union of New York Telephone Co. plant workers, should perform the telephone installation work at the Floyd Bennett naval air base in New York and disallowed the complaint of the International Brotherhood of Electrical Workers (AFL) Local No. 3 that its members were entitled to this work by virtue of an old agreement between it and the New York Telephone Co.

Basing his decision upon the Navy Department's authorization to the New York Telephone Co. to permit employment of telephone workers on the Floyd Bennett construction, Dr. Witte stressed that his finding did not constitute a precedent in the determination of other IBEW claims for telephone work in other sections of the nation. But it was viewed that the Witte decision might well become the guiding principle of the Federal Government's labor agencies in ruling against the attempts of the IBEW to invade the telephone construction and installation field.

The position of the Army in instructing its various branches through General Somervell's Services of Supply to disregard the old OPM Building Trades Stabilization Board of Review memorandum approving the IBEW to do telephone work was also cited by Dr. Witte in his opinion. The IBEW Local No. 3 is considered the strongest local of that AFL union in the country. In precipitating the present controversy before the WLB it staged a strike at the Floyd Bennett Field, holding up the vital Navy work for more than a week.

Court Opinion

"No case has been cited to us," the court opinion in the Southern Bell case stated. "We have found none where the record (NLRB) is so completely lacking in any evidence of any activities, any union bias on the part of the employer; none where **it shows such scrupulous recognition, such earnest efforts to ascertain and abide by the obligations imposed by the Act, and such complete avoidance of any act or word from which domination or interference by the employer could be inferred;** and none in which there was such complete absence of an atmosphere of seated purpose or preference for one labor organization over

the other or for any; none in which the evidence **more positively and beyond question** showed that the employees had freely and without any interference, coercion, restraint or even persuasion on the part of the employer selected their bargaining representative." (It will be recalled that the NLRB had the evidence before it of the secret mail ballot, tabulated and received by an impartial auditing firm, of the Southern Bell Employees' Association which had showed over 17,000 to less than a score had voted for that association as against the IBEW.)

The enforcement of the NLRB order, besides being unsupported as to evidence and findings, which would have the effect of disturbing and disrupting the morale of the employees, which would be a most injurious situation during the present war emergency, the court held. The order if enforced would throw the company and its employees into a state of confusion, the court added. "For the court to decree for the order's enforcement," Judge Hutchinson's opinion stressed, "would be completely against the Wagner Act and public policy."

It was believed rather doubtful in view of the strong language of the New Orleans Circuit Court of Appeals that the NLRB would be very successful in securing a review and reversal by the U. S. Supreme Court, especially because of the Circuit Court's finding of lack of evidence to support the Labor Board's order.

As a result of the Circuit Court's decision, it is anticipated that the National Federation of Telephone Workers will commence an immediate effort to obtain the affiliation of the Southern Bell Employees' Association with its national independent organization.

The NLRB in its order as "accuser" for the IBEW "has been advocate enough to induce itself as judge to decide the issue wrongly," the Circuit Court opinion stated, "that is, **contrary to the real, the free wishes of the employees** those rights and not the rights of labor organizations it is the purpose of the Wagner statute to protect."

This defeats the employees in the exercise of the very rights the Act guarantees them, the court added, in a very significant view which will be helpful to telephone employees in the independent labor groups. The court decision stated the Wagner Act does not provide for any views by the NLRB that because employees prefer and select an unaffiliated labor organization instead of a nationally affiliated union there is any presumption of this preference being "coerced or purchased by the employer."

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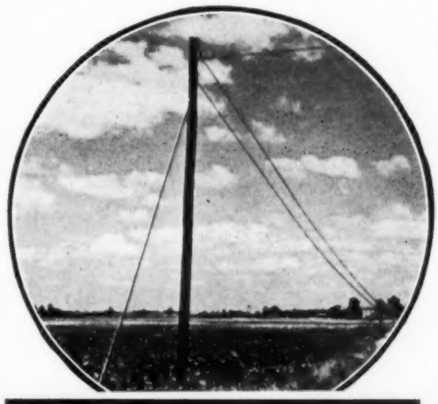

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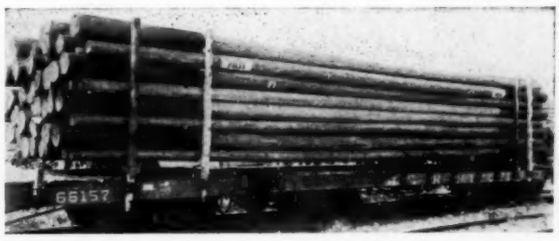

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the Signal Corps, Services of Supply, during the past one and one-half months.

This represents a virtual doubling of the flow of communications material over the previous corresponding period of one and one-half months, according to Major General Dawson Olmstead, Chief Signal Officer of the Army.

The Signal Corps, which supplies all branches of the Army with communications equipment, is expediting production of the vital radio apparatus and devices which particularly form the communication "nerve center" in the present modern, mobile warfare for the Army and also to a considerable extent for the United Nations' fighting forces.

Illustrative of these efforts, the Signal Corps during the past month awarded contracts, aggregating approximately $1,000,000,000 in value, to scores of communications and radio manufacturing companies of which about 90 per cent is for radio apparatus and other signal devices.

This task of producing signal apparatus has been distributed by the Signal Corps to approximately 1,500 prime contractors and more than 10,000 subcontractors. The Signal Corps' appropriations for the procurement of communications and radio apparatus have amounted to approximately $6,500,000,000 since July 1, 1940.

A considerable portion of the radio apparatus and equipment procured by the Signal Corps is for the Army Air Forces and the Army's Armored Force. Radio devices supplied by the Signal Corps, are on American Flying Fortresses and fighter planes on every combat front and on tanks in several combat areas. Radio and telephone apparatus and equipment link the Infantry and Artillery.

The Signal Corps today is supplying about 34,000 items of equipment and component parts. In contrast a statement in the Chief Signal Officer's report in 1919 related that "a serious difficulty existed in the preliminary procurement of this equipment for the reason that approximately 25 kinds of sets were required and each set involved from 20 to 50 component units of a character not readily procured from a single Signal Contractor."

In comparison with the present program of using a portion of Signal Corps appropriations for supplying equipment to the United Nations and Lend-Lease countries, approximately 40 per cent of the communications equipment for the American Army was supplied by England and France up to July 1, 1918, and after that date the American Expeditionary Forces continued to purchase throughout the World War large quantities of communications equipment from those and neutral European nations.

In the present procurement of billions of dollars' worth of equipment for the Signal Corps, 40 per cent has been given to subcontractors by the prime contractors. The Signal Corps also has maintained in its contracts a clause providing for renegotiation if the original purchase prices can be reduced.

Priorities Regulation No. 10

All public telephone companies and manufacturers of apparatus and equipment necessary to provide and maintain telephone service are placed under the Allocation Classification System and should place the appropriate symbol—CLASS 11.10—directly on all of their purchase orders.

"Orders for all apparatus and equipment necessary to provide and maintain telephone service, and supplementary related services furnished by the telephone companies and all orders for the repair, maintenance and operating telephone service should bear this Allocation Symbol:—CLASS 11.10.

L. C. Anderson to Head Frank H. Wood Chapter

L. C. Anderson of Lincoln was chosen president of the Frank H. Woods chapter of the Independent Telephone Pioneers at its first anniversary picnic at Capitol Beach. There were 75 present. Claude Walker, Beatrice, was named vice president, Flora Johnston, secretary and Joe Hartley, treasurer.

Elected to the board of directors were W. C. Cooper, Hastings; H. W. Wheeler, Dorothy Lefler, John Backstrom, Myrtle Hiner, all of Lincoln, and J. W. Dudgeon, Hastings.

Women Aid Communications

Government - operated communications centers and manufacturing units, as well as Signal Corps supply depots, are finding women adequate as replacements for men workers, the War Department reported July 1. One-fourth of the 700,000 civilian employees of the War Department are now women, many working in technical jobs, and they are being hired in increasing numbers.

Explanation of Order L-50

(Continued from page 28)

isfy request or complaints of persons for such relocation when based upon reasons other than protection of service?

No. Such relocations involving replacements are authorized for the protection of service only.

Paragraph (b) (2). "Limitations on changes in Equipment and Facilities. Unless expressly authorized by the Director of Industry Operations, all Operators shall: (2 Limit additions of exchange central office equipment and exchange line plant to such as are essential to the maintenance or protection of service or are necessary:"

26. Do the words "additions of exchange central office equipment" in Paragraph (b) (2) and "additions of exchange central office equipment" in Paragraph (d) (2) include new units of equipment such as a new dial central office unit or a new switchboard unit in either the existing central office building or in a new building as well as additions to existing dial units and switchboards?

    Yes. The word "additions" includes both and treats such additions to plant without regard to whether it is attached to existing equipment or not. However, a new unit is not an "addition" if it replaces existing equipment which is then removed from plant. Such a replacement, of course, is authorized only if consistent with Paragraph (b) (1) of the Order.

Paragraph (b) (2) (i). Limit additions of exchange central office equipment and exchange line plant to such as are essential to the maintenance or protection of service or are necessary: (i) To meet the known or fairly anticipated demands for service responsibility required by persons engaged in direct defense or charged with responsibility for public health, welfare, or security, including but not by way of limitation, those in the service categories shown in Schedule A attached hereto."

27. Does Paragraph (b) (2) (i) provide for "residence" service as well as "business" service for the persons set forth therein?

    Yes. It makes no distinction between the various classes of service that might be provided for the essential use of such persons in connection with activities related to direct defense or public health, welfare, or security. In all such cases, however, the provisions of Interpretation No 1 should be borne in mind.

Paragraph (b) (2) (iii). "To provide minor cable extensions, utilizing less than 100 pounds of copper, when such extensions are required to make available for use existing idle exchange line plant not otherwise usable."

This Paragraph of the Order provides an exception as to additions to exchange central office equipment and exchange line plant. The intent is to allow minor mechanical rearrangements which will afford full use of existing plant and, thus, enable telephone companies to provide service to as many subscribers as possible with a relatively small expenditure of material. It should be noted, however, that such extensions are authorized only if they make available for use,

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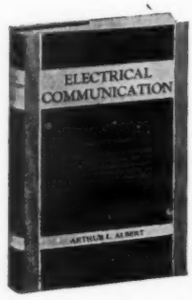

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Telephone Engineer

HANDBOOK TABLES

By B. C. Burden

File—General Data
Date—July 15, 1942

General

Subject: *Standard Communication Definitions*

The definitions which follow are a few taken from a new volume titled "Definitions of Electrical Terms" recently published by the American Institute of Electrical Engineers. They are of interest as they give exact descriptions of many technical terms used in the telephone field.

Two-Wire Repeater

A two-wire repeater is a telephone repeater which provides for transmission in both directions over a two-wire telephone circuit.

21 Type Repeater

A 21 type repeater is a two-wire telephone repeater in which there is one amplifier serving to amplify the telephone currents in both directions, the circuit being arranged so that the input and output terminals of the amplifier are in one pair of conjugate branches, while the lines in the two directions are in another pair of conjugate branches.

22 Type Repeater

A 22 type repeater is a two-wire telephone repeater in which there are two amplifiers, one serving to amplify the telephone currents being transmitted in one direction and the other serving to amplify the telephone currents being transmitted in the other direction.

Four-Wire Repeater

A four-wire repeater is a telephone for use in a four-wire circuit and in which there are two amplifiers, one serving to amplify the telephone currents in one side of the four-wire circuit and the other serving to amplify the telephone currents in the other side of the four-wire circuit.

Carrier Repeater

A carrier repeater is a repeater for use in carrier transmission.

Terminal Repeater

A terminal repeater is a repeater for use at the end of a trunk or line.

Intermediate Repeater

An intermediate repeater is a repeater for use in a trunk or line at a point other than an end.

Cord Circuit Repeater

A cord circuit repeater is a telephone repeater associated with a cord circuit so that it may be inserted in a telephone circuit by an operator.

Telegraph Repeater

A telegraph repeater is an arrangement of apparatus and circuits for receiving telegraph signals from one line and retransmitting corresponding signals into another line.

idle pairs **not otherwise usable.**

28. Should the weight of copper contained in the cable terminals and in the stubs of cable terminal which are installed in connection with the minor cable extensions provided for in Paragraph (b) (2) (iii) be included in determing the pounds of copper used?

    Yes.

29. May additional cable terminals be installed on existing cables where required to make available for use existing idle exchange line plant not otherwise usable?

    Yes. In addition, full consideration should be given to the possibility of providing additional service from the existing cable by the installation of additional terminals thereon before determining to install an extension upon the existing cable under the provisions of Paragraph (b) (2) (iii). Minor cable extensions under Paragraph (b) (2) (iii) of the Order may not be made if there is a demand for service over the existing cable route which could be satisfied by the installation of additional cable terminals.

30. If there are idle outside plant facilities and it is not reasonably anticipated that such idle facilities will be required for the service of persons specified in Paragraph (b) (2) (i) at the location where such facilities are now located, are such facilities to be considered as "not otherwise usable" under the provisions of Paragraph (b) (2) (iii)?

    Yes Where there exists idle outside plant facilities which are not required to meet the known or fairly anticipated demands for service of persons specified in Paragraph (b) (2) (1) of the Order and to the extent that central office equipment is available, such facilities are considered "not otherwise usable" as provided in Paragraph (b) (2) (iii).

31. Are "minor cable extensions" as referred to in (b) (2) (iii) intended to include cable reinforcements?

    Yes. This includes not only extensions from existing cables but also cable placed parallel to existing cable, tie connections between cable, cable stubs, cable terminals and loading coils, together with their stub cables.

32. Is the 100 pounds of copper referred to in (b) (2) (iii) limited by the ordering length or the in-place length of cable?

    By the in-place length. Any excess of copper is required to be returned to inventory either as usable cable or junk.

33. Do the provisions of Paragraph (b) (2) (iii) of the Order permit monor cable extensions utilizing less than 100 pounds of copper in connection with service to persons other than those specified in Paragraph (b) (2) (i)?

    Yes. Service extensions to persons not specified in Paragraph (b) (2) (i) are limited to less than 100 pounds of copper. Copper extensions for service to persons specified in Paragraph (b) (2) (i) may exceed the 100 pounds of copper limit provided such extensions conform to requirements of Paragraph (b) (6) of the Order, and provided further that all other restrictive provisions of the Order have been complied with.

34. Where cable extensions are permitted under Section (b) (2) (iii) of the Order is the size of the cable extension restricted in anyway by the number of cable pairs "not otherwise usable" in the cable to which the extension is attached?

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Yes. The size of any cable extension permitted under Paragraph (b) (2) (iii) is limited by the number of pairs actually "not otherwise usable" at the point from which the cable extension is made. In other words, if only 50 pairs are classified as "not otherwise usable" the extension cannot be greater than 50 pairs, the only exception to such cases being where the actual number of pairs is not exactly the same as would be provided by a standard size cable. In other words, if 24 pairs are not otherwise usable, the nearest cable size, which would probably be a 26-pair cable, could be used.

35. Are there any exceptions made in the limitations under (b) when recovered cable rather than new cable is used?

    No. Recovered cable is considered as a new cable. The use of recovered cable rather than new cable is specifically called for, however, under the provisions of Paragraph (b) (7) of the Order, whenever such use will reduce the use of scarce and critical materials, i.e., new cable.

Paragraph (b) (3). "Limit the further installation of residence extensions to such are for the essential use of person set forth in Paragraph (b) (2) (i) above. Additional lines or additional stations on party lines shall not be provided as a substitute for extensions stations."

36. Are extension bells permitted?

    No. Any extension of a residence telephone, either in the form of an extension set or extension bell, is prohibited.

37. Is jack and plug equipment permitted where only one telephone set equipped with a plug is provided and the bell is permanently connected to the line?

    No. Any extension of a residence telephone, either in the form of an extension set or extension jack, is prohibited.

38. A customer having residence individual-line service and one extension requests that the extension telephone be changed to a portable set and that jacks be installed at several locations. May this be done?

    No.

39. May an incoming customer other than one of those designated in Paragraph (b) (2) (i) be allowed to keep an extension used by the customer moving away if it has not been removed when he places his order?

    Yes, the Order prohibits the further installation of residence extensions.

40. Many storekeepers live in apartments above their stores. Since the wording of the Order has been changed from "extension in residences" to "residence extensions" may an extension from the business service downstairs be installed in the customer's residence upstairs?

    Yes. The Order prohibits only "residence extensions" and not "business extensions in residence."

41. Some business customers request off-premise extensions from their business lines to be installed in addition. May such business off-premise extensions be installed in residences?

    Yes. The prohibition applies to "residence extensions" and not to "business extensions." It should be borne in mind, however, that the limitations of Paragraph (b) (2) prohibits any extension involving addition to exchange central office equipment or exchange line plant except as to persons described in Paragraph (b) (2) (i).

Paragraph (b) (4) (ii). "When necessary in order to avoid the addition of exchange plant and/or equipment and to the extent necessary to meet the known and fairly anticipated demands for service reasonably required by persons set forth in Paragraph (b) (2) (i) above. (ii) Reserve idle facilities in existing exchange plant."

42. Does Paragraph (b) (4) (ii) require that reservation be made in the central office, including reservation of call-carrying capacity, as well as in the exchange line plant?

    Yes.

UNINTERRUPTED SERVICE

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To the engineers responsible for maintaining this efficient service, Roebling offers the best safeguards against wire and cable failure...a century of wire-making experience, thorough knowledge of signal and communication wire product requirements and a complete line of the finest wires and cables that have been proved by the important factors of time and performance.

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Metal weighing more than a battleship is salvaged each year by Western Electric. When telephone equipment is worn out, we refine the old metal and make it available for use again. In view of today's scarcity, this practice is especially valuable to the Army, the Navy and industry.

1 THE SCRAPPED EQUIPMENT IS SENT from Bell Telephone Companies all over the country to Western Electric's smelting plant in New York.

2 RECLAIMING OF METAL is in line with Western Electric practice of conserving materials. It has been in operation for more than 25 years.

3 REFINED METAL once went back into new telephone equipment. Today it reports to the armed forces, in communication apparatus made by us—

4 AND IN PLANES, TANKS, GUNS, SHIPS. Propellers like these, one for a battleship, the other for a Navy dredge, are made of telephone "scrap."

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FOR VICTORY ...keep buying U.S. War Bonds

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Of Top Quality by **UNIQUE**

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Protect Public, Splicer, and Furnace. No. 50 C Shield shown here. Of 22 Ga. galvanized steel. Reinforced edges. 23"x17" x17". No. 50 — four-sided with grate. No. 50 A — same without grate.

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UNIQUE MANUFACTURING CO., INC.
221 W. Walton St. — Chicago, Ill.

43. An exchange cable and/or central office equipment has spare capacity only sufficient "to meet the known or fairly anticipated demands for service reasonably required by persons" set forth in Paragraph (b) (2) (i). May this capacity be utilized for the service of persons other than those described in Paragraph (b) (2) (i) if it be determined that when the requirements of the persons set forth in Paragraph (b) (2) (i) actually materialize they can be cared for by regarding existing customers?

    Yes. Paragraph (b) (4) (ii), requires the reservation of idle facilities in existing exchange plant to meet the service requirements of persons described in Paragraph (b) (2) (i). Reservation may be accomplished by agreement between the Operator and interim subscribers, provided it is assured that the service required is readily made available to the persons described in Paragraph (b) (2) (i) when demanded.

Paragraph (b) (7). "Conserve or re-use existing telephone equipment and facilities whenever such conservation or re-use will reduce the use of scarce and critical materials. This paragraph of the order requires telephone companies to conserve and re-use all existing telephone equipment and facilities so as to reduce the use of scarce and critical materials. It requires that equipment and facilities which have been retired from use be re-used in place of new equipment and facilities.

44. A subscriber requests installation of a new dial PBX. There is a stock of suitable manual PBX boards on hand. Is the telephone company authorized to provide the new dial PBX?

    No. Paragraph (b) (7) of the Order requires the re-use of the manual PBX board in order to conserve the use of scarce and critical materials which would be used if the new dial PBX were installed.

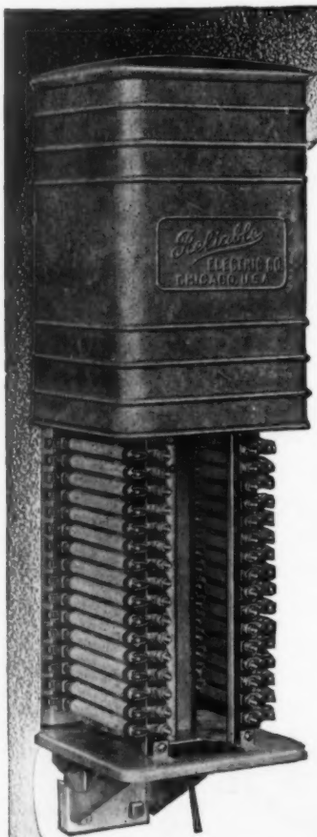
Schedule A. "Telephone service to be considered as for direct defense, public health and safety for the purpose of Order L-50."

45. In Item 4 of Schedule A, does "distributors of drugs" and "food*** distribution" include retail outlets for such products?

    Yes.

46. Does Item 7 of Schedule A refer to "residence extension telephone or to "plant extensions?"

    It refers to "residence extension telephones."



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The original design of the Reliable B27 Protected Cable Terminal is a proved standard of protection and maintenance economy. Equipped with the Reliable self-cleaning sawtooth discharge blocks, static discharges are dispelled without lag time, and unnecessary grounding and dirty carbon trouble are eliminated. All connections are made in front within easy reach of the lineman—no need to remove fuses or reach around terminal. The detachable mounting bracket permits one man installation. Exceptionally rugged construction guarantees long, dependable service.

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A Chance to Help

Announcement was made recently that a Signal Corps Reference Library has been established in Washington by Major General Dawson Olmstead, Chief Signal Officer of the Army. A committee of friends of the Signal Corps Library, under the chairmanship of Lt. Colonel W. L. Hallahan, 48 Wall Street, New York, will assist the Chief Signal Officer in carrying out plans for collecting up-to-date technical and scientific items for inclusion in the new library.

Nationally known engineering societies have pledged their cooperation in making available books and periodicals that would be difficult to obtain through commercial outlets.

Technical books and pamphlets on the above named subjects may be shipped directly to the Signal Corps Reference Library, Office of the Chief Signal Officer, War Department, Washington, D. C. Contributors should make use of the special book-mailing rate of one and one-half cents per pound, not to exceed seventy pounds in any one package.

25 YEARS AGO THIS MONTH

Taken from TELEPHONE ENGINEER files of June, 1917

TELEPHONE employees during 1917 were giving local or long distance telephone messages relating to military matters precedence over all other calls. The installation of equipment used for military work also was given preference over installations for private parties. Any telephone calls to or from government or state officials relating to federal or state troops, army supplies or Red Cross work came under the special instructions regarding the handling of military messages or installation of equipment. (History repeats!)

During July of 1917, E. C. Stoeffhaas, formerly president of the Rebuilt Telephone Equipment Company, established himself as general manager of the Rebuilt Electric Equipment Company in Chicago.

Twenty-five years ago an announcement from Washington revealed that the wireless telephone was to be developed in the course of the war. The governments plan was to use this means of communication between ships at sea and between ships and aeroplanes, as well as between ships and aeroplanes and land stations.

James Hudson of St. Louis, a son of J. A. Hudson, president of the Columbia Telephone Company during 1917 was awarded, during July of that year, a commission as first lieutenant in the Signal Corps of the United States Army. Mr. Hudson graduated from the University of Missouri and Harvard Law School.

On July 12, 1917 Lord Northcliffe delivered a brief address to the people of the Pacific Coast from the directors' room of the American Telephone and Telegraph Company. He was the guest of Theodore N. Vail, then president of the company. A party of English army officers and several women also attended the demonstration of the long-distance telephone.

John Y. Rust, Jr., Passes

John Y. Rust, Jr., son of John Y. Rust, Sr., who is president of the San Angelo (Tex.) Telephone Company, died recently following an automobile accident. He was 39 years old.

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—and hundreds of other hardware items for pole line construction

Comments like that—which you hear from telephone men everywhere—are common for Hubbard Pole Line Hardware.

Over a long span of years the men who service the vital telephone lines of our country have come to look upon Hubbard Hardware as a friend. They know that once a job's completed with Hubbard they won't be back to make repairs and replacements. They know that Hubbard Pole Line Hardware will last for years . . . for the "duration," or for many durations if you want to put it that way.

And today they know that very quality is helping to save steel for the war effort; is saving manpower and is saving machinery, just as it will help you save.

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FROM now on, due to WPB's rationing of telephones, you will have ever increasing need for paystation service, but there are many Gray Paystation types to meet this need in both large and small communities.

For the smaller operating companies, No. 11 Side Mounting Attachment Type Gray Paystations are ideal. Simple, sturdy—usable with any type of wall set, common battery, local battery or magneto. They open up a very profitable source of new business. At the same time, they make it possible to extend service into every potential area without drain on critical war materials.

NOTE—The Government's 6% excise tax is NOT assessed on unattended pay station calls.

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HARTFORD, CONN.

Wire Chief's Training Course

(Continued from page 23)

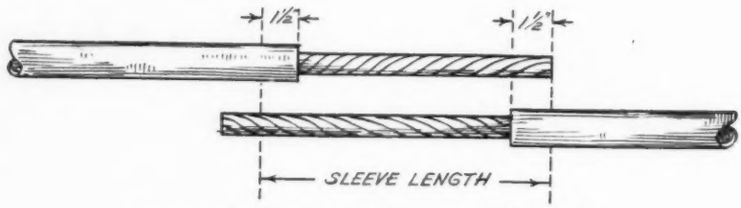


Fig. 6 — Measuring for Sheath Removal at Splice

parafine should be heated to approximately 380°-F for best results. Cable splicer's themometers are available for testing the temperature of the parafine. The thermometer should be suspended in the parafine kettle in such a manner that it does not touch the kettle sides or bottom otherwise the reading may be incorrect.

Should the parafine ignite, due to becoming overheated, simply place the cover on the kettle and remove from the fire. This will smother the flame. As soon as the parafine is heated to the proper temperature, the helper should raise it to the splicer's platform using the handline and pulley. This is a dangerous operation and the helper should keep everyone away from the immediate vicinity of the splicing platform, and should himself stand well back from the platform when raising the heated parafine. The splicer after placing a drip pan immediately below the splice, pours the heated parafine over both sheath and core. The parafine should first be poured over the sheath starting at a point approximately 6" back from the edge and then working toward the center of the splice, as shown in Fig. 8. This tends to drive out any moisture that may have been absorbed by the paper insulated conductors near to the point where they come out of the sheath. If moisture is present in the insulation, a frying or crackling noise will be heard. The boiling out process should be continued until all evidence of moisture has ceased.

Making a Straight Splice

AFTER the cable core has been boiled out, the ends should be tied back as shown in Figure 9 and we are ready to proceed with the actual splicing operations.

Splices are either of the **random** or **tagged** type. The random type is one in which the pairs in the two cables are connected together without re-

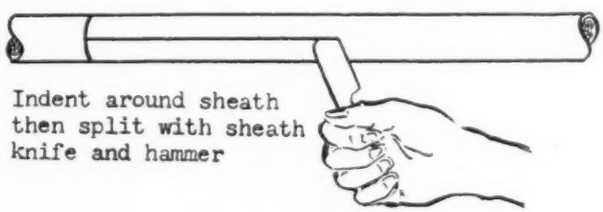
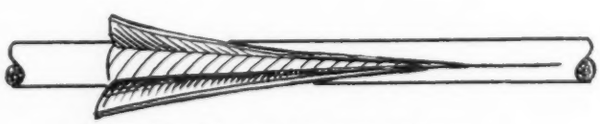


Fig. 7 — Removal of Sheath.



Fold sheath back using pliers

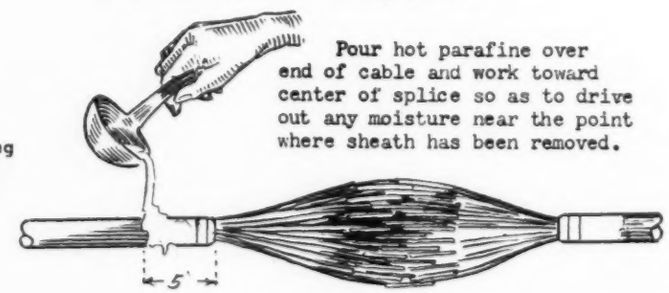

Pour hot parafine over
end of cable and work toward
center of splice so as to drive
out any moisture near the point
where sheath has been removed.
5"

Fig. 8 — Boiling Out SPLICE

gard to their identity, whereas, the tag splice is one in which the pairs in each direction are identified and numbered and then spliced accordingly. Let us consider first the **random straight splice.** The actual splicing of the cable conductors requires that the paper insulation be removed and that the Conductors then be twisted together and the surplus ends cut off, and the bare splice covered with a cotton sleeve. On important toll cables, and particularly where large gauge conductors are involved, it is sometimes desirable to solder the splice. In ordinary exchange cables however the spliced conductors need not be soldered.

In making the splice, and particularly in the larger size cables, the splices should be staggered so as to prevent the core from becoming too bulky in one spot. The several steps in the actual connection of the conductors is shown in the series of pictures beginning with Fig. 10-A.

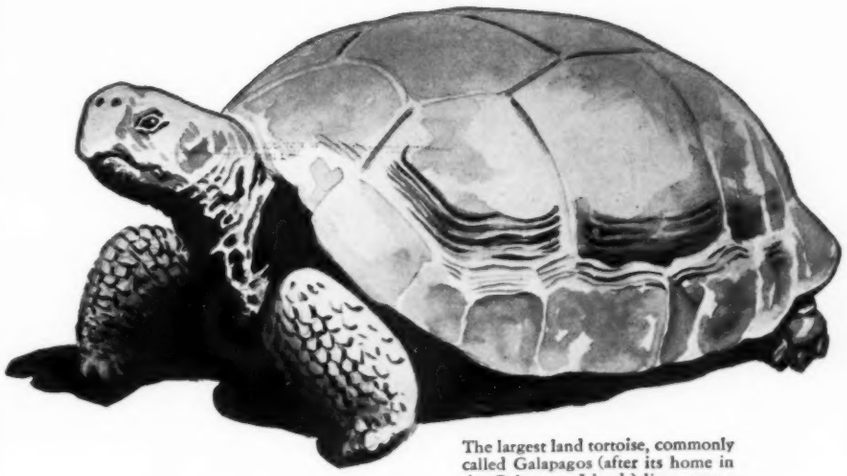
Referring to Figure 10-A, the first step is to bring a pair, preferably from the back of the splice, and from each direction, together. Holding the pair from the left hand cable in the right hand, and the pair from the right hand cable in the left hand, they are then brought together at the point where the splice is to be made and given a sharp twist so as to break the insulation. With the wires still looped together and holding the cable scissors in the right hand, cut off the excess conductor so that the ends are about 5" long. Holding the wires tightly just below the loop, pull off paper insulation. Next split the wires and slip a cotton sleeve of the proper length on each wire. Slip the sleeves back out of the way and then bring the wires together at the point of splice and holding the two conductors between the thumb and forefinger of the left hand take hold of the ends of the wires with the right hand and form a small crank. Then crank twist approximately 6 turns so as to form a tight electrical contact between the two wires. Cut off the excess end leaving approximately 1-⅛" of conductor and slide the sleeve into place using the left hand. Stretch the sleeve so that it will not slip out of place.

After all splicing is completed, the core should be boiled out and then

MONTHLY STATION BAROMETER

Installation figures are no longer available and for the duration these figures will not be published.

LONG LIFE!



The largest land tortoise, commonly called Galapagos (after its home in the Galapagos Islands) lives, sometimes, in excess of 100 to 150 years.

Even if he lives to be 175... A Hemingray Glass Insulator can *Outlive Him*

There are three reasons for the long life of Hemingray Insulators. First, the "secret" glass batch-mix—climax of 87 years of experience. Second, the Owens-Illinois quality-control of production. These result in insulators without voids, stresses or strains—so homogeneous that they are impervious to moisture-penetration and operating temperature changes. And third, the fact that time does not affect their structure. You could remelt a 100-year old Hemingray glass insulator and make it into another insulator which in turn, would last another 100 years. Cost is low to begin with—*lower* in service-life. Hemingrays are sold *only* through jobbers.

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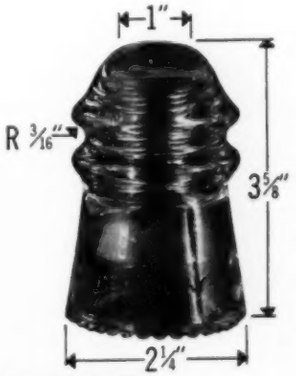
Hemingray Number 9 (illustrated) with drip-point petticoat for fast moisture run-off is a favorite for rural line operation. Number 43 has top groove for long spans in mountainous country. Number 42, with its long leakage path, keeps rural "toll" lines trouble-free.



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VIRGINIA
MOUNTAIN LAKE HOTEL ..... Mountain Lake

wrapped with linen tape, after which it should again be boiled out and it is then ready for the placing of the lead sleeve.

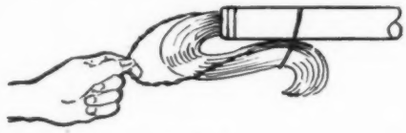

Fig.9—Core Tied Back Ready for Splicing

Fig.10-A—Bring Pair Together and Give Sharp Twist

Fig.10-B—Cut off excess conductor (leave $4\frac{1}{2}$" ends)

Fig.10-C—Remove insulation, place sleeves, and twist

Fig.10-D—Slip Sleeve Over Twisted Conductor

Examination No. 16

CABLE SPLICING

1. What are the principal duties of the Cable Splicer's helper?
2. What equipment is needed for boiling out cable?
3. What equipment is needed for wiping up sleeves?
4. Explain the purpose and use of plumber's candles in lead work?
5. What are the three types of splices?
6. Explain how the sheath is marked and removed at a straight splice point.
7. Why should parafine be exactly the right temperature before being used?
8. Explain the correct procedure in boiling out a cable core.
9. What is the difference between a RANDOM and a TAG splice?
10. Describe the step by step procedure in making the actual conductor splice.

HELP WANTED

A Telephone Company operating in North & South Carolina has an immediate opening for a cable splicer experienced in both construction & maintenance. Job offers permanent employment & working conditions. Furnish qualifications, a small photograph & salary expected. Address 8280, c/o Telephone Engineer.

Tom Winn III

Tom Winn, manager of the Sturgeon, Clark and Centralia branches of the Missouri Telephone Company, has taken an indefinite leave of absence from the company. He will enter the State Hospital at Mt. Vernon for treatment.

Convention Reports

(Continued from page 30)

Frank Russell listens while R. C. Hummel, Technical Adviser, West Coast Telephone Co., explains a trick circuit.

Mr. I. F. Krehbiel, Commercial Superintendent of the Interstate Telephone Company, then spoke on "Wartime Customer Relations." He stated that customer relations have gone through an evolution. Public relations originally meant handling customer ownership of stock, and there had been some bitter reactions.

Mr. Krehbiel emphasized his opinion that we are fighting for our life. There are several things that can be done in an effort to keep the business as it is:

1. By advertising. He believes that the people conducting the war have more faith in private enterprise than in public ownership.
2. Through the 300,000 odd telephone employees. They must guard against getting nerves on edge and irritable. Every employee should be sold on the idea of being a little more pleasant and patient and courteous than ever before.
3. Telephone people should become interested in politics and see that the people elected to the legislature and congress have some sense.

In the absence of Brigadier General Frank Stoner, the meeting was addressed by **Capt. M. W. McInnis** of the U. S. Signal Corps.

Mr. James D. Olson, Assistant State Defense Coordinator for Oregon, discussed "Civilian Defense."

He outlined the organization of civilian defense which was established by the President as a branch of the executive department with Mr. La Guardia as the head. It was set up on a regional basis the same as the Army in nine areas. Mr. Jerrold Owen was appointed as head. There are two divisions—civil protection and citizen participation. They have been confronted with lack of funds but no lack of help.

Mr. Robert P. Judy, General Commercial Superintendent of the Washington Area of The Pacific Company, spoke of the necessity of conserving materials. The war effort may require the putting in of large facilities and in some cases makeshift jobs may be resorted to that ordinarily would not be considered good service. He emphasized that a complete record should be kept of such things and they should be reviewed promptly after the emergency passes and plans should be made for correcting such unsatisfactory situations after the war. He spoke of the eagerness of The Pacific Company to cooperate in ironing out problems both now and after the war.

Mr. D. S. Wilkinson, President of Columbia River Telephone Company, was the next speaker on the program, his subject being "Wartime Rate Adjustment Problems." He said that we must give serious thought to what is in store for us when the emergency is over. Telephone costs have gone up by leaps and bounds. He said that many employees, though they could secure higher rates of pay in defense industries, prefer to stay with

SUB-CYCLE

MASTER RINGING CONVERTER

"The Choice of the Telephone Industry" Because There's—

NOTHING TO ADJUST
NO MOVING PARTS
NO ROUTINE MAINTENANCE

BUILT FOR HEAVY DUTY

SUB-CYCLE provides ample power. Cannot interfere with radio reception. Is quiet and economical in operation.

SIX MODELS
For loads ranging from small PBX to the large Central office.

OUTPUT CAPACITY
7½ watts to 40/50 watts.

ALSO PULSATORS
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MANY companies that made pre-war purchases of drop wire without fully considering its lasting qualities are now faced with the necessity of making replacements. A serious problem under today's restrictions.

It is always wise to think of Quality, not only as a safeguard against shortages, but for economy reasons in normal times.

In Acorn Insulated Wire you will find the wear-resisting qualities that assure long service under severest operating conditions.

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the telephone companies so that they will have jobs when the war is over. However, the large wages elsewhere are proving a temptation to some so it will be necessary for the industry, in order to save its experienced personnel, to plan on salary increases.

Some of the directors and officers of the Oregon Assn.: Gail Wells, L. A. Gritten, secretary-treasurer of O.I.T.A., Lowell E. Brown and Wm. A. Shaefer.

About 120 attended a **banquet** Friday evening. They had the pleasure of hearing a really remarkable address by **Mr. E. Palmer Hoyt,** Publisher of the "Portland Oregonian" and National President of Sigma Delta Chi—"What you Know About the War."

The Saturday morning session opened with an address by D. O. Hood, President of Columbia Utilities Company.

Mr. Hood commented at length on the revised contracts submitted to various members of the association by The Pacific Telephone and Telegraph Company.

Very beneficial results have already been obtained as a result of several years of negotiation between the Toll Settlement Committee of the Oregon and Washington associations and representatives of The Pacific Company. Substantial increases in toll compensation have been offered to most companies surveyed so far. Most of the new agreements provided toll compensation payments ranging from the equivalent of 40 to 80 per cent of originating revenues, depending upon the services performed for The Pacific Company.

Mr. Hood argued, however, in favor of a more standardized method of fixing toll compensation so that benefits would be extended to all companies on a more equal basis. He pointed out that independent companies have a definite responsibility to the public in maintaining the highest possible standards of service. Many companies, especially the smaller concerns, are unable to maintain adequate plant and equipment facilities to meet these responsibilities under existing revenues.

Mr. Hood was especially critical of the basis of compensation offered on TWX traffic. He stated that there is general dissatisfaction among Independent operators with the inadequate compensation offered for TWX traffic.

In the last speech of the formal session Mr. Louis Pitcher, Executive Vice-President of the United States I.T.A., spoke on "National Affairs".

Thanks to the courtesy of Major Her-

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man SCHERNER of the IV Fighter Command, selected groups of the delegates were permitted to view the elaborate air-raid defense control arrangements of the U. S. Army. This made a most interesting finish to a more than usually interesting convention.

Personals from the Field

Carl J. Metz

Carl J. Metz, assistant vice president of the Postal Telegraph Co., Chicago, has been assigned as a civilian engineer to the Signal Corps in the 6th Corps Area. He has already started his new duties. Prior to his association with the Postal company **Mr. Metz** was with the International Telephone and Telegraph Co. in South America.

•

Recording Secretary **J. E. Byrne,** of the Wisconsin State Telephone Association is getting quite a reputation for himself as a poet. His bulletins are always newsy and usually have at least one of his poetic efforts to dress them up. Write him for page 3 of his bulletin No. 52.

•

Leslie Gritten, secretary of the Oregon Independent Telephone Association, reported their recent convention in an off-the-record report that is one of the funniest manuscripts we have read in a long time. If you want to laugh, write him for a copy.

•

E. R. Hannibal, who is ill in California, is being missed on the general managers' page No. 2 of "Cross Talk," the publication for the employees of the West Coast Telephone Company at Everett, Washington.

H. R. Christianson, president of the Michigan Independent Telephone Association is expecting many visitors at the Michigan Convention on July 22 and 23 in Lansing. The golf day is not scheduled, but it is tho't many will be on hand the day before the convention starts to get in a round or two.

•

Guy Floyd Deskins, 75, manager of the Worden (Kan.) Telephone Exchange, died last month.

•

C. A. Goodwin, 32 years manager of the Burlington branch of the Wisconsin Telephone Co., is dead at the age of 62.

•

William Osick will be the new owner of the Osage City, Mo., exchange of the United Telephone Company which has applied to sell the exchange to him.

ALL the strength and durability inherent in steel are combined---with definite economies---in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

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•

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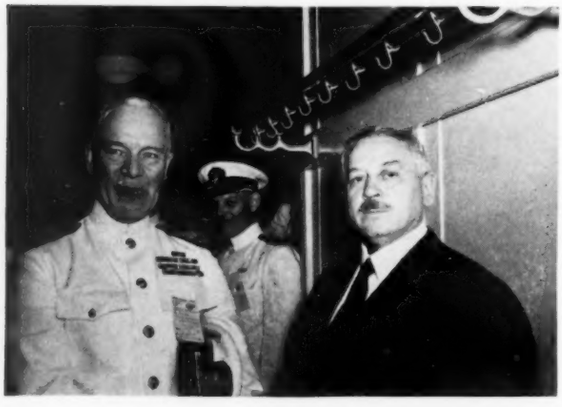
Snapped during the Navy "E" presentation to the Automatic Electric Company. Left, Rear Admiral Wat T. Cluverius USN (Retired) is busily engaged in conversation with P. W. Conrad, president of Automatic Electric Company, while H. L. Gary, left, vice president of Theodore Gary & Company is surprised with an informal pose. Center, Rear Admiral Cluverius making the presentation speech. Right, immediately following the presentation everyone sang "Anchors Aweigh". R. A. Phillips, president of the United States Independent Telephone Association, at the rostrum, was chairman of the program.

Navy "E" Formally Presented To Automatic Electric Company

AT a brilliant and impressive ceremony, the Navy "E" Award for excellence in industrial production was officially presented to Automatic Electric Company on Wednesday, July 1, at 4:15 p. m. The ceremony took place in a specially arranged assembly room at the Company's offices in Chicago, in the presence of a gathering of distinguished guests, including Naval officers, representatives from the Office of the Inspector of Naval Material, Independent telephone executives, officials of labor organizations, and selected representatives from all Company departments. For those employees unable to attend in person, arrangements were provided to broadcast the proceedings by loud speaker throughout all departments of the organization. Souvenir programs containing a list of all company men now in the armed services and a list of employees entitled to wear the "E" emblem were distributed to guests and employees.

Rear Admiral Wat T. Cluverius, USN (Retired), as official representative for Secretary of the Navy Frank Knox, made formal presentation to Automatic Electric Company of the Navy "E" pennant, which was accepted on behalf of the Company by Mr. A. F. Adams, chairman of the board.

The day's program began with a luncheon at the Union League Club at which Admiral Cluverius and other Naval officers were guests of the Company. On return to the plant, the guests were taken on a tour of inspection of the manufacturing departments.



Rear Admiral Wat T. Cluverius USN (Retired) poses for the camerman with Mr. A. F. Adams, Chairman of the Board of the Automatic Electric Company

The presentation program was opened with appropriate music, after which R. A. Phillips, chairman of the program and president of the United States Independent Telephone Association spoke briefly, paying tribute to this evidence of steadily increasing war production effort throughout the Automatic Electric organization, and stressing the importance of all employees continuing their efforts to maintain production at the highest levels.

In explaining the significance of the Navy "E", Mr. Phillips pointed out that it is the emblem of excellence prized by the officers and crew of every ship and plane in the Fleet, and that since 1906, this award has been made to units which have earned special recognition for high proficiency in such work as engineering, gunnery and battle practice.

"Until recently," continued Mr. Phillips, "the Navy 'E' has been awarded only to Navy personnel. But in recognition of the contribution made by Automatic Electric Company in the production of Naval material, and by special permission of President Franklin D. Roosevelt, the Navy 'E' is now awarded to your company, which is privileged for a period of six months to fly the Navy 'E' pennant bearing the Navy fouled anchor and white 'E' on a blue field."

Mr. Phillips then introduced Rear

Rear Admiral Wat T. Cluverius USN (Retired) presents the Navy "E" Pennant to Automatic Electric's Chairman of the Board A. F. Adams.

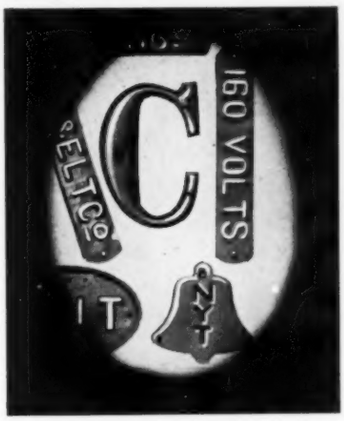
Captain S. C. Loomis, USN (Retired) presents "E" Emblems to Nellie Carroll and William R. Bishoff. Acknowledgement on behalf of the employees was made by Miss Carroll.

Admiral Cluverius, who presented a dramatic picture of the serious and stirring days ahead and of the nationwide and unified effort that the Navy must make and is making to meet the challenge on a world-wide front. In stressing the vital importance of industrial effort in the strengthening of our Naval forces, Admiral Cluverius said, "Without the work being done throughout industry in providing such equipment as machinery, ammunition, instruments and communication equipment, our ships and men would be valueless." He expressed the Navy's confidence that the Company, through continued production effort, would earn the right to add stars to the pennant for succeeding six month periods until the final and inevitable victory.

Admiral Cluverius concluded by making formal presentation of the Navy "E" pennant to A. F. Adams, chairman of the board of Automatic Electric Company. In accepting on behalf of the Company, Mr. Adams paid tribute to the employees for their work which had earned the honor, and expressed thanks to the Navy Department, pledging continuance of the Company's highest endeavors in whatever production effort it may be called upon to contribute.

The presentation of the award was symbolized by the unfurling of the "E"

(Turn page please)



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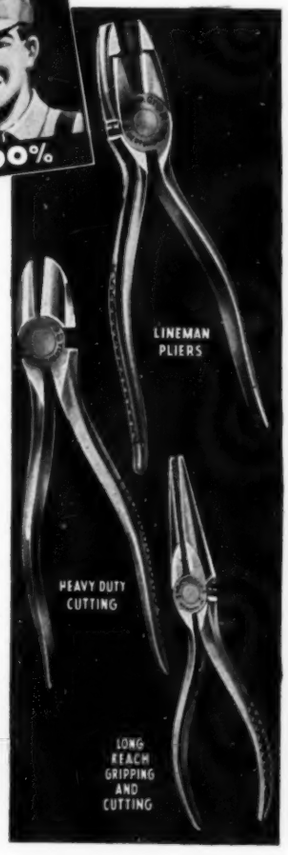

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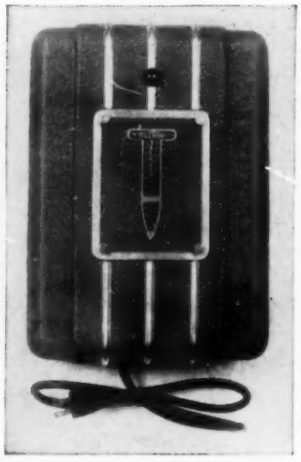

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pennant on the backdrop of the speaker's rostrum to the playing of "Anchors Aweigh", while a similar pennant was hoisted on a staff on the roof of the factory building.

Symbolic presentation of the "E" emblems, which all employees of the Company are now privileged to wear, was then made by Captain S. C. Loomis, USN (Retired), Inspector of Naval Material for the Ninth Naval District, to William R. Bishoff and Nellie Carroll, the man and woman shop employees having the longest service records with the Company. Acknowledgement on behalf of the employees was made by Miss Carroll.

Among the guests at the ceremony, in addition to those already mentioned, were Lt. Comdr. C. F. Waters, USN (Retired), Lieut. K. W. Miles, USNR, Lieut. (j.g.) G. S. Babcock, USNR, all of the Office of Inspector of Naval Material, Chicago; F. M. Mirimonti, I. R. Reynolds and C. F. Dwyer of the same office; Ensign R. J. Morard, USNR, and Ensign L. A. Healy, USNR, of the Office of Public Relations, Great Lakes, Ill., Ensign Freeman Jones, USNR, Recruit Training Office, Great Lakes; H. L. Gary, vice president, Theodore Gary and Company; Frank S. Spring, president, Associated Telephone and Telegraph Company; and Louis Pitcher, executive vice-president, United States Independent Telephone Association.

First official notice of the Navy "E" Award came in the form of a letter dated May 20 to P. W. Conrad, president of Automatic Electric Company, from Secretary of the Navy Knox, in which the Secretary expressed pleasure that the "Navy Board for Production Awards had designated Automatic Electric Company as a recipient of the Navy 'E' for excellence in production."

Arrangements for the program were carried out under the supervision of E. C. Seepe, personnel director of Automatic Electric Company, and Ensign Morard of the Navy Public Relations Office.

(END)

Frank L. Eldridge Named Special Representative by Philco

Frank L. Eldridge

Appointment of Frank L. Eldridge, who is well known throughout the telephone industry, as special representative of the Philco Storage Battery Division in the Independent telephone field was announced today by M. W. Heinritz, manager of the Division. Mr. Eldridge will continue to make his headquarters in Chicago.

Mr. Eldridge has a host of friends and acquaintances in the Independent telephone industry, having been engaged in sales and Independent Telephone Association work for the past 28 years.

Mr. Eldridge's connection with the Philco Storage Battery Division begins at a time when its production and sales, already at new high levels, are continuing to increase rapidly in response to the need for quick deliveries and heavy-duty battery service.

As a result of the growing demand for its products, the Philco Storage Battery Division moved last year to a much larger plant in Trenton, N. J., where its productive capacity is more than three times what it formerly was.

The Philco plant in Trenton is one of the best arranged and most efficient in the country and is devoted entirely to the manufacture of heavy-duty storage batteries. The building is of brick, steel, and glass with sawtooth and monitor roof construction. Seven hundred feet in length, the plant is so arranged that all operations are carried out on a single level with a maximum of efficiency. The plant layout for rout-

ing of materials permits a continuous flow of production from the input of raw materials at one end to the loading of finished product at the other.

A complete chemical, physical and electrical laboratory is an integral part of the plant, thus permitting research, quality control, and development work on improved and substitute materials to be carried on continuously and efficiently.

War production, with its unprecedented demands upon the communications, transportation, and manufacturing facilities of the country, has increased the need for heavy-duty storage batteries very substantially. The availability of the new Philco plant, making possible much greater production and quick deliveries on orders, is enabling the Company to play an increasingly important part in the storage battery industry, Mr. Eldridge pointed out.

Mr. Eldridge will continue his representation of the Ray-O-Vac Company of Madison, Wisc., with whom he has been associated the past 23 years as representative to the telephone and industrial fields.

Stromberg-Carlson Names Schiffino

A. C. Schiffino, who has just been appointed to head up the new sound systems division of the Stromberg-Carlson Tel. Mfg. Company, which will handle sound problems of government

requirements and of war industries. Since his graduation from Ohio Northern University, Mr. Schiffino has spent his entire career with Stromberg-Carlson in sound system engineering.

Graybar's Oldest Active Employee in Years of Service Retires

Last month in Chicago, a luncheon was tendered John T. Valenta, Assistant Supply Specialist, upon his retirement after fifty-one years of service with Graybar.

Possessor of the famous Graybar Plaque in his position as the oldest employee in active service, he in turn made a formal presentation of it to Mr. A. L. Hallstrom, Vice President and Philadelphia District Manager, who now holds the honor role with forty-seven years of service.

Others present at the luncheon in his honor were: Mr. A. H. Nicoll, President of the Company, Mr. W. P. Hoagland, Vice President and Central District Manager, and thirty-five fellow members of Graybar's Chicago organization.

New Toll Line Constructed

A new full metallic transposed long distance toll line between La Plata Telephone Company and the Gibbs, Mo. Telephone Company was completed and in operation on July 1st.

This will add a great convenience to The Gibbs Tel. subscribers and community in general in getting such a fine toll service. The La Plata Telephone Company will handle all long distance service through the S. W. Bell Telephone Company for the Gibbs Company. Heretofore the Gibbs Company has been getting toll service through a ground line through the Southwestern Bell at Kirksville, Mo.

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CAN PROLONG LIFE of WIRE AND MESSENGER

OVER TENSION DESTROYS LIFE of WIRE AND MESSENGER

PROTECT YOUR EXISTING OUTSIDE PLANT

MAINTAIN CORRECT TENSION *with a* DILLON DYNAMOMETER

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Strowger Automatic Club Holds Annual Golf Meet

Members of the Golf Club of Automatic Electric's Strowger Automatic Club braved a rainy Saturday on June 20th at St. Andrews to compete in the Club's annual golf tournament, with War Stamps as prizes in the various events.

The steady downpour kept scores in the higher brackets, a net of 87 by E. R. Neuer of the Engineering Department, being the lowest card of the day.

There were twelve events with prizes being awarded for the lowest and highest scores—the longest putt —the longest drive and similar endeavors. Other events were the 27 and 36 hole competition and the foursome match play.

In one of the foursomes, four Strowger Automatic Club members and longtime employees of Automatic Electric were found to have a combined service record of 139 years—probably one of the most experienced foursomes (in the telephone business) which could be gotten together anywhere. The picture above was snapped by the Strowger Club photographer as they were about to leave

one of the greens. Reading from left to right they are: T. E. (Trig) Meyer, 45 years; "Ed" Benisek, 24 years; O. C. (Ole) Hovland, 41 years and C. M. (Charlie) Candy, 29 years.

Plan Rural Line Abandonment

The Ohio Central Telephone Corporation has applied for authority to abandon two miles of a rural line extending from its Holmesville Exchange to serve as the remote subscriber upon such line an Amos Graven. The company says that the line is badly deteriorated and that it would cost the prohibitive sum of $513.39 to rebuild, and that a canvass of the intervening territory has failed to develop any additional subscribers in the two miles.

General Douglas MacArthur, heroic commander of the United States Forces in the Phillipines, who was recently transferred to Australia where he is now leader of the Allied Forces. This photograph of General MacArthur was taken in Manila shortly before the Pacific War began. The General is using a Kellogg telephone. "March of Time" photo.

The Clearing House

For the convenience of readers of Telephone Engineer

Order L-50 A Poser For Political Campaign

The question of telephone facilities for candidates for political offices during the coming campaign and Congressional and state elections next November has passed a "tough nut" problem under the L-50 Telephone Limitation Order which bars new telephone service to all organizations except those directly connected with the war effort or engaged in public health and welfare activities.

The subject is now being studied by the WPB agencies, the Board of War Communications and other governmental branches interested in communications. One view is that even for political campaigns and elections the ban against new telephone service should not be lifted.

But in certain governmental circles there is taken the stand that this election telephone service is to be offered on an absolutely minimum basis only interim or temporary service and can be taken out of reserve facilities, and will be returned to the reserve facilities category in a few months. Furthermore telephone service is essential to the political candidates and to deny it would distinctly favor those seeking reelection because they can use government facilities. It is thought, too, that to prohibit such telephone facilities might be harmful to the country's democratic processes of elections.

Takes Over the Fore Electric Company

The Benwood Linze Co., St. Louis, Mo., designers, engineers and manufacturers of electrical rectifiers and rectifier-transformer assemblies announces a further step in their overall program of expansion, namely, the purchase of the Fore Electric Co., located at 4800 Delmar Blvd., St. Louis, Mo. The purchase includes all of the company's equipment, inventory, assets and trade name. All facilities have been moved to the plant of the Benwood Linze Co., at 1815 Locust Street.

The purchase of the Fore Electric Co. substantially augments the corporate structure of the Benwood Linze Co. and its wholly owned subsidiary, the B-L Electric Manufacturing Co., further enabling the parent company to better serve the War Program and industrial concerns in general.

Hans Bohuslav

Named Vice President Of Sterling Engine Co.

Mr. Addison F. Vars, President, announced last fortnight that Mr. Hans Bohuslav has joined the Sterling Engine Company as Vice President in charge of Engineering. In making the announcement Mr. Vars stated that the acquisition of Mr. Bohuslav is another step in Sterling's all out program in producing engines for the Navy. "Mr. Bohuslav's invaluable experience is a priceless asset in the battle for production." said Mr. Vars.

Before coming to the Sterling Engine Company, Mr. Bohuslav was associated with the Enterprise Engineering Company of San Francisco. During his ten years' stay he served first as Chief Engineer and was later promoted to Vice President in charge of Engineering. He is known throughout the engineering industry as an authority on diesel and gas engines, and directed the development of the current Enterprise engines.

James E. Stuart, vice president of the Two States Telephone Co., Texarkana, Texas, received praise from one of their local newspapers recently for the outstanding job that company has done in providing service in their section. The normal load for Texarkana, which was 43,000 local calls per day, has now jumped to 90,000 local calls per day because of several new plants being located there. Operators increased from 72 to 198.

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Stromberg Carlson No. 896 4-bar 1000-1600 or 2500 ohm ringer compacts $9.50 ea. 5-bar @	10.50
Western Elec. No. 323 Transmitters complete less backs @	1.10
L. M. Ericsson Watch-case receiver without cord @	.75
Western Elec. No. 156 Double ringing and Listening keys @	2.50
Western Elec. No. 317 2 or 3-bar 1000 or 2500 ohm Biased ringer compact type wall set. Inside connection type $7.00—Outside connection @	6.75
Western Elec. No. 1801 P. B. X. Swbd. with 20 lamp lines equipped, 5-pairs plugs and cords and 2 Plugs ending Trunks @	75.00
Western Elec. No. 20 Desk set with 3-bar 1000-1600 or 2500 ohm ringer inside connection signal set @ $10.50—4 bar $11.00.—5-bar @	12.00
Stromberg Carlson No. 988 desk set with 3-bar 1000-1600 or 2500 ohm ringer inside connection signal set @ $9.00—4-bar $9.75—5-bar @	10.50
Western Elec. No. 56-A drops on Mtg. Strips—10-12 or 15 per strip, per line	1.00
Kellogg No. 729 S. A. Oak Wood C. B. Hotel sets with Straight line ringer and Booster Coil @	6.75
Kellogg No. 8-A Talk through repeating Coils @	.75

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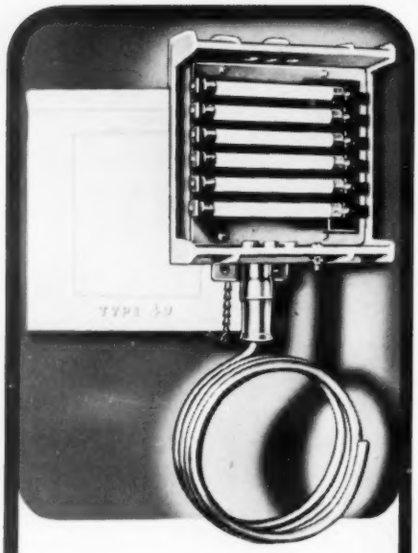

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